# Contents



## Model Solved Papers

# CURRENT AFFAIRS

## 65TH NATIONAL FILM AWARDS

The winners of the 65th National Film Awards were announced on April 13, 2018.

The 65th National Film Awards honoured two actors posthumously this year — Sridevi was conferred the Best Actress Award for her last film *Mom*, and Indian cinema's highest honour, the Dada Saheb Phalke Award, was given to actor Vinod Khanna. Mr. Khanna passed away in April 2017 after a prolonged illness and Ms. Sridevi died on February 24, 2018 in Dubai.

Mr. Khanna became the 49th recipient of the Dada Saheb Phalke Award, and only the second actor to be named for the honour posthumously after Prithviraj Kapoor.

The Best Actor Award went to Riddhi Sen for his performance in Kaushik Ganguly's Bengali film *Nagar Kirtan*, which also won the Best Costume, Make-Up and Special Jury awards.

Rima Das' Assamese film *Village Rockstars*, on a village girl's dream to be a musician, was named the Best Feature Film, besides receiving the awards for Best

Location, Sound Recordist, Editing, and Best Child Artiste (Bhanita Das).

Two Malayalam films cornered five National Awards - *Bhayanakam* secured Best Direction and Best Screenplay (adapted) for Jayaraj and Best Cinematography for Nikhil S. Praveeri. *Thondimuthalum Driksakshiyum* fetched Best Supporting Actor for Fahad Fazil and Best Screenplay (original) for Sanjeev Pazhoor.

Music composer AR Rahman won the Best Songs award for Tamil film *Kaatru Veliyidai* and the Best Background Music for *Mom*.

*Newton* was named the Best Hindi Film, and a Special Mention went to its actor Pankaj Tripathi for his portrayal of a cynical CRPF officer. The Nargis Dutt Award for Best Feature Film on National Integration went to the Marathi film *Dhappa*. Divya Dutta was named the Best Supporting Actress for her role in *Irada*.

- Best Actor (Male): Riddhi Sen, *Nagar Kirtan Rockstars*
- Best Film: Village *Rockstart* (Assamese)
- Best Direction : Jayaraj, *Bhayanakam*
- Best Supporting Actor (Male) : Fahad Fazil, *Thondimutha Uim Driksakshiyum*
- Best Supporting Actor (Female) : Divaya Dutta, *Irada*
- Best Original screeenplay : Sajeev Pazhoor, *Thondimuthalum Driksakshiyum*
- Best Adapted Screenplay: Jayaraj, *Bhayanakam*
- Best Popular Film providing wholesome entertainment: *Baahubati; The Conclusion*
- Best Music Direction: A.R. Rahman, *Kaatru Veliyidai*
- Best Background Score: A.R. Rahman, *Mom*
- Best Mate Playback Singer: KJ. Yesudas, *'Poy Maranja Kalam'* in *Viswasapoorvam Mansoor*
- Best Female Playback Singer: Shashaa Tirupati, 'Vaan' in *Kaatru Veliyidai*
- Best Lyrics: Prahlad, *Muthu Ratnada Pyate*
- Best Debut Film of a director: Pampally, *Sinjar*

## COMMONWEALTH GAMES 2018

The 2018 Commonwealth Games were held in Gold Coast, Australia from April 4 to 15, 2018. The opening ceremony of the XXI Commonwealth Games on April 4, 2018 was painted with colour and gaitey and well received a packed house of 35,000 at the Carrara Stadium, Gold Coast.

Gold Coast laid out a grand welcome for the 6600 athletes and thousands of others guests from 71 countries and territories.

A pageantry of Australian culture with traditional music, dance and arts took centre stage as they presented a smorgasbord of colour, water, surf and sand with local artists and musicians.

Some of Australia's great sports stars brought the Queens Baton into the stadium for Prince Charles to read out the message of Queen Elizabeth II and declare the Games open.

India was led by badminton star P.V. Sindhu with all the athletes and officials clad in the new outfit designed for the team by the Indian Olympic Association.

**Final Medals Tally**

| Country | Gold | Silver | Bronze | Total |
|---|---|---|---|---|
| Australia | 80 | 59 | 59 | 198 |
| England | 45 | 45 | 46 | 136 |
| India | 26 | 20 | 20 | 66 |
| Canada | 15 | 40 | 27 | 82 |
| New Zealand | 15 | 16 | 15 | 46 |

# UNION BUDGET : 2018-19

The Union Finance Minister Arun Jaitley presented the Union Budget : 2018-19 in Parliament on February 1, 2018. He pulled out all the stops in the Narendra Modi government's last full Budget to promise a better deal for farmers, boost the rural economy and make the poor less vulnerable to health exigencies.

Responding to the distress in the agriculture sector that has reared its head in various States over the past year, the government has decided to offer a minimum support price (MSP) of at least 1.5 times the expenses borne by farmers for all crops.

Equity markets were briefly spooked following the move to reintroduce a tax on long-term capital gains on equity shares at the rate of 10% for all gains over Rs. 1 lakh. No indexation benefit will be granted and the securities transaction tax will continue.

Citing income tax data to show that individual businesspersons paid less average tax than the salaried class, he reintroduced a flat Rs. 40,000 deduction from taxable income for the latter in lieu of the existing tax exemptions for transport and medical allowance and extended this relief to pensioners.

But any gain in take-home salaries has been virtually offset by raising the 3% education cess levied on personal income tax and corporate tax. Now, a 4% education and healthcare cess will apply.

Hopes of a respite for consumers on the indirect tax front was also extinguished in this Budget, with the Centre hiking customs duties on a range of products, including mobile phones, wearable devices, television display panels, furniture, diamonds, foot wear, cosmetics and dental floss.

The idea is to push global producers to start making these goods in India, but till that happens, consumers will need to foot higher costs.

A much-anticipated rationalisation of the high excise duties on petrol and diesel was carried out with a Rs. 8 reduction in these duties, but consumers will get no relief as a new road and infrastructure cess of Rs. 8 per litre has been levied to fund projects. Unlike excise duties, the Centre is not required to share cess with the States.

The governement's inability to give away too many goodies were largely due to its fiscal constraints, with this year's fiscal deficit overshootmg the 3.2% of GDP target and likely to touch 3.5% on account of the GST related issues. Instead of a 3% deficit in the coming year, the Centre settled to target the 3.3% mark, deferring the glide path to 3% to 2020-21.

Mr. Jaitley said the focus of the Budget – farmers, rural India, healthcare and education for the poor – reflected the Modi government's emphasis on improving the ease of living for the common man.

**NHPS Proposed :** Finance Minister Arun Jaitley unveiled an ambitious plan to launch "the world's largest government-funded health care programme" that will benefit 10 crore households.

The proposed National Health Protection Scheme (NHPS) will provide coverage of up to Rs. 5 lakh per family annually to take care of secondary and tertiary care hospitalisation costs. Mr. Jaitley reckoned that this will benefit around 50 crore people from poor and vulnerable families. The Budget for 2016-17 had a similar announcement offering a Rs. 1 lakh cover for 8 crore families, but that's yet to take off.

The Rashtriya Swasthya Bima Yojana (RSBY) now gives poor families an annaul coverage of Rs. 30,000, while several State governments have implemented their own health insurance shemes with varying coverage levels.

**FLAGSHIP SCHEMES**

| | | | |
|---|---|---|---|
| Rashtriya Swasthya Bima Yojana | 4.6 | 0.4 | 0.2 |
| Sarva Shiksha Abhiyan | 216.8 | 235 | 261.2 |
| Integrated Child Development Scheme | 158.9 | 199.6 | 230.8 |
| Swaccha Bharat (Urban) | 21.3 | 23 | 25 |
| Pradhan Mantri Gram Sadak Yojana | 179.2 | 169 | 190 |
| Pradhan Mantri Awas Yojana (rural) | 160.7 | 230 | 210 |
| MNREGS | 482.1 | 550 | 550 |

All figures in Rs. Billion; RE : revised estimates, BE: budget estimates Source : Government of India

Finance Minister Arun Jaitley proposed to double the expenditure on the government's flagship Digital India programme to Rs. 3,073 crore for the next fiscal against Rs. 1,425.63 crore in 2017-18, a move that has largely been welcomed by the industry.

Under Digital India, a maximum of Rs. 864.22 crore will be spent on promotion of electronics manufacturing, followed by Rs. 425 crore on delivering e-governance services, Rs. 400 crore on the government's digital literacy programme and Rs. 300 crore on development on manpower.

**ON A DIGITAL DRIVE**

- 1,700 is the number of apps developed by government till date
- 10 C-DAC (Centre for Development of Advanced Computing) units set up
- 400 toll plazas now collect digital payments
- 905 mn people use smart phones
- 70 mn users in rural areas use smart phones

**Central Apps**

**UMANG :** Short for Unified Mobile Application for New-age Governance, it is a one-stop app for all govt services

**AGRIMART :** This app can be used to get prices of crops in markets within a 50-km radius

**NATIONAL PORTAL FOR INDIA :** Developed as a mission mode project (MMP) underNational e-Governance Plan to provide data, services

At Rs. 10,783 crore, the Department of Space (DoS) gets its biggest outlay to date and also the best yearly increase in five years – of 18.6%.

It is also well above the Rs. 9,093 crore allocated last February.

Also, for fiscal 2017-18 which ends on March 31, the DoS drew about Rs. 62 crore more than the last year's outlay, revised estimates for the year show.

Back in 2013-14, DoS probably received its best ever annual increase of nearly 40% over the previous year.

**Railways Sets Highest Ever Capital Spend**

In the last full Budget of its term, the NDA government charted out a plan for the Railways with a capital expenditure (capex) target of Rs. 1.47 lakh crore and a revenue target of over Rs. 2 lakh crore — the highest ever. It also pledged to upgrade the suburban railway network of Mumbai and Bengaluru.

The Budget's ambitious capital spending roadmap is backed by Rs. 53,989 crore – slightly less than the budgetary estimate figure of Rs. 55,000 crore last year.

The capex figure is 22 per cent higher than 2017-18 (RE), and includes internal resources of Rs. 11,500 crore. The Indian Railway Finance Corporation will raise Rs. 28500 crore, LIC will lend Rs. 26,440 crore and Rs. 27000 crore will be other invested through Public-Private Partnerships (PPP). Railways will end the year with capital spending at Rs. 12 lakh crore, some Rs. 11,000 crore less than the original target

| The Allocations | |
|---|---|
| BE 2018–19 outlay in Rs. billion<br>Railway safety fund | 610.9 |
| Rashtriya Rail Sanraksha Kosh | 50.0 |
| Capital fund | 69.9 |
| Depreciation reserve fund | 5.0 |
| Development fund | 10.0 |
| Extra budgetary resources-IRFC | 285.0 |
| EBR-fnstitutional financing | 264.4 |
| EBR-partnership | 270.0 |
| **Total** | 1,565.2 |
| BE : Budget Estimate | |

Electrification, signalling upgrade, track renewal—3,900 km next fiscal — and commissioning of lines (new and doubling) together will take a bulk of the spending.

There is a 148 per cent increase in the target of commissioning 1,000 route kilometres in new lines. Gauge conversion targets have also increased by 74 percent to achieve the required 1,000 route kilometres. As opposed to the 945 km of doubling done in FY17, the Railways has targeted 2,100 km for FY18.

Bengaluru will get a new suburban network of 160 km, 60 km of which will be an elevated corridor at a capital cost of Rs 17,000 crore. This will be done to reduce congestion and commuting time.

Mumbai's local train network got a major fillip as the Budget announced doubling of 90 km of existing lines at Rs. 11,000 crore and another 150 km of new lines, including elevated tracks, at Rs 40,000 crore.

**From Roads To Hawai Jahaj : At a Glance**

| Scheme | 2017–18 (RE) | 2018–19 (BE) |
|---|---|---|
| UDAN | 2.0 | 10.14 |
| Bharatnet | 57.1 | 81.75 |
| Digital India | 14.25 | 30.73 |
| AMRUT | 49.9 | 60.0 |
| Smart Cities | 40.0 | 61.69 |
| Swachh Bharat | 23.0 | 25.0 |
| Solar Power | 11.17 | 20.45 |
| DDUGJY | 69.5 | 65.5 |
| IPDS | 43.72 | 49.35 |
| LPG subsidy | 156.5 | 203.7 |
| NHAI | 831.7 | 916.6 |
| Sagarmala | 4.8 | 6.0 |
| Ganga Plan | 22.5 | 22.5 |

UDAN = Ude Desh ka Aam Nagrik/Regional air connectivity scheme; AMRUT = Atal Mission for Rejuvenation & Urban Transformation; DDUGJY = Deen Dayal Upadhayay Gram Jyoti Yojana; IPDS = Integrated Power Development Scheme

BE = Budget Estimates; RE = Revised Esimates

**Conclusion :** A major policy announcement in the Budget was to ensure all trains and stations "progressively" get WiFi and CCTV coverage.

Continuing with the Modi government's focus on station development and monetisation, Jaitley has earmarked money for the redevelopment of 600 more stations. The government also said all stations in India with footfall of over 25,000 would get escalators.

In what is perhaps a bigger challenge than the capex target, the set for earnings is Rs 2,01,090 crore—a seven per cent increase from last year.

The Railways expects to carry 1,216 million tonnes

of freight — 51 million tonnes more than the last year - and has set a target to increase its passenger segment earnings to Rs. 52,000 crore from the current Rs. 50,125 crore. From non-fare earnings, it expects around Rs. 20,790 crore to take its total Gross Traffic Receipts to Rs. 2,00.840 crore. To put the figure in context, this year's revised estimates for earnings is pegged at Rs. 1.87,425 crore.

The Railways will end the fiscal with an operating ratio of 96 per cent, a negligible improvement from last year's 96.5 percent. It expects this headline number to improve to 92.8 per cent by the end of this fiscal year.

The ambitious rural package in this Budget brings in free gas connections to three crore new households, free electricity connections to four crore homes, two crore new toilets under the Swachh Bharat Mission, higher micro-irrigation coverage, and so on. But of the massive outlay of Rs. 14.34 lakh crore required to bankroll these grandiose plans, as much as Rs. 11.98 lakh crore is expected to be met from extra-budgetary resources. A similar template has been used in social sector schemes. The National Health Protection Scheme, to provide a Rs. 5 lakh health cover to 10 crore households, is a much-needed social security intervention to benefit poor households that rely overwhelmingly on private health care. But there is little clarity on modalities. The entire dutch of proposals on improving learning outcomes, providing universal health coverage and alleviating the lot of minorities and girl children is expected to be funded through a mere Rs. 16,000-crore increase in allocations to Rs. 1.38 lakh crore. Infrastructure appears to be one of the few sectors where the funding problem has been addressed, with PSUs bankrolling a significant proportion of the Rs. 5.97-lakh crore outlay for FY19.

While being liberal in its announcements for rural India, the Budget has been frugal in its giveaways to the middle class and the corporate sector. Expectations of an increase in the basic exemption limit on income tax have been belied; instead, a standard deduction of Rs. 40,000 is back for salaried taxpayers. While it is only fair that the salaried pay income tax on their net income (after expenses) as the self-employed do, this deduction (which also replaces transport and medical reimbursements) is too small to establish real parity. The clamour for an across-the-board cut in the basic corporate tax rate from 30 to 25% has also been ignored, with the cut limited to mid-size companies (up to Rs. 250-crore turnover). Though this will benefit the overwhelming majority of corporate tax filers, how this impacts the competitive edge of India's largest companies in the global context will be debated. Especially so, since the U.S. recently slashed its corporate tax rate to 21% and European nations average

## BUDGET AT A GLANCE

| (Rs. billion) | 2016-17 Actuals | 2017-18 Budget Estimates | 2017-18 Revised Estimates | 2018-19 Budget Estimates |
|---|---|---|---|---|
| 1. Revenue Receipts | 13,742,03 | 15,157.71 | 15.054.28 | 17,257.38 |
| 2. Non-Tax (net to cenre) | 11,013.72 | 12,270.14 | 12,694.54 | 14,806.49 |
| 3. Non-Tax Revenue | 2,728.31 | 2,887.57 | 2,359.74 | 2,450.89 |
| 4. Capital Receipts | 6,009.91 | 6,309.64 | 7,123.22 | 7,164.75 |
| 5. Recoveries of Loans | 176.30 | 119.33 | 174.73 | 121.99 |
| 6. Other Receipts | 477.43 | 725.00 | 1,000.00 | 800.00 |
| 7. Borrowing and other liabilities | 5,356.18 | 5,465.31 | 5,948.49 | 6,242.76 |
| 8. Total Receipts (1+4) | 19,751.94 | 21,467.35 | 22.177.50 | 24,422.13 |
| 9. Total Expenditure (10+13) | 19,751.94 | 21,467.35 | 22,177.50 | 24,422.13 |
| 10. On Revenue Account of which | 16,905.84 | 18,369.34 | 19,443.05 | 21,417.72 |
| 11. Interest Payments | 4,807.14 | 5,230.78 | 5,308.43 | 5,757.95 |
| 12. Grants in Aid for creation of capital assets | 1,657.33 | 1,953.50 | 1,892.45 | 1,953.45 |
| 13. On Capital Account | 2,846.10 | 3,098.01 | 2,734.45 | 3,004.41 |
| 14. Revenue Deficit (10–1) | 3,163.81 (–2.1) | 3,211.63 (–1.9) | 4,388.77 (–2.6) | 4,160.34 (–2.2) |
| 15. Effective Revenue Deficit (14–12) | 1,506.48 (–1.0) | 1,258.13 (–0.7) | 2,496.32 (–1.5) | 2,206.89 (–1.2) |
| 16. Fiscal Deficit [9 – (1 + 5 + 6)] | 5,356.18 (–3.5) | 5,465.31 (–3.2) | 5,948.49 (–3.5) | 6,242.76 (–3.3) |
| 17. Primary Deficit (16–11) | 549.04 (–0.4) | 234.53 (–0.1) | 640.06 (–0.4) | 484.81 (–0.3) |

**Note :** (i) GDP for BE 2018–2019 has been projected at Rs. 187,223.02 billion assuming 11.5% growth over the estimated GDP of Rs. 167,846.79 billion for 2017–18 (RE)

(ii) Individual items in this document may not sum up to the totals due to rounding off (iii) Figures in parenthesis are as a percentage of GDP.

20%. For the salariat and the corporate sector, the increase in education cess will offset some of the gains from these tax cuts. Senior citizens have benefited, particularly from the tax relief on interest from bank deposits and post office schemes, which has been hiked from Rs. 10,000 to Rs. 50,000 a year. These interest payouts are also exempt from the vexatious TDS provisions. This relief renders senior citizens far less vulnerable to steadily dwindling interest rates on bank deposits and small savings schemes; it also helps them to continue relying on fixed-income instruments to cover living expenses. This relief may reverse the unhealthy trend of risk-averse savers shifting wholesale from bank deposits to market-linked options such as equity mutual funds, in search of higher returns.

| RUPEE COMES FROM (IN PAISE) | |
|---|---|
| Borrowings & other liabilities | 19 (19) |
| Corporation tax | 19 (19) |
| Income tax | 16 (16) |
| Customs | 4 (9) |
| Union Execise duties | 8 (14*) |
| Goods and Services Tax & other taxes | 23 (10) |
| Non-Tax Revenue | 8 (10) |
| Non-debt Capital receipts | 3 (3) |

Total receipts are inclusive of states share of taxes and duties; *represents services tax and other taxes in BE 2017–18

Figures in brackets refer to corresponding position in BE 2017–18

| RUPEE GOES TO (IN PAISE) | |
|---|---|
| Centrally Sponsored Scheme | 9 (10) |
| Central Sector Scheme | 10 (11) |
| Interest Payments | 18 (18) |
| Defence | 9 (9) |
| Subsidies | 9 (10) |
| Finance Commission and Other Transfers | 8 (5) |
| States' share of taxes and duties | 24 (24) |
| Pensions | 5 (5) |
| Other Expenditure | 8 (8) |

Total expenditure is inclusive of states share of taxes and duties, which have been netted against receipts.

Figures in brackets refer to corresponding position in BE 2017–18

**JAI KISAN**

- The Budget has a slew of measures for boosting income and consumption in the rural areas
- Aims to double farm income by 2022 and provide house to every poor by 2022
- MSP for kharif crops to be raised to 1.5 times of the cost of produce this year. It is expected to put more money in the hands of farmers and, hence, boost demand and consumption
- National Health Protection scheme to provide Rs. 500,000 benefit per family every year to 100 million households
- Free cooking gas to 80 million poor households
- Women contribution to provident fund (PF) reduced to 8% (of basic salary), from 12% in the first three years, translating into higher disposable income
- Allocation to the food processing sector doubled to Rs. 4 billion-likely to benefit fruit & vegetable growers
- An agri-market infrastructure fund with a corpus of Rs. 20 billion will be set up for developing and upgrading agricultural marketing infrastructure
- Launch of Operation Green on lines of Operation Flood with total corpus of Rs. 5 billion
- Allocation to farm credit increased to Rs. 11 trillion from Rs. 10 trillion earlier

**NATIONAL E-DISTRICT SERVICE TRACKER :** App provides state-wise, category-wise listing of services available undere-District MMP

**VOTER INFORMATION SEARCH USING INTERNET :** To check if your name has been included in the electoral roll & to locate polling station

**Rural Matters**

| MINISTRY | 2016–17 (RE) | 2017–18 (RE) | 2018–19 (BE) |
|---|---|---|---|
| Health and Family Welfare | 376.7 | 515.5 | 528.00 |
| Ministry of Human Resource Development | 429.8 | 470 | 500 |
| Ministry of Women and Child Development | 168.7 | 212.3 | 247 |

**A summary of some of the direct tax changes is given below :**

1. Tax exemption for farmer producer companies
2. Corporate tax reduced to 25 per cent for companies having a turn over up to Rs. 2.5 billion
3. No change in personal tax rates
4. Salaried taxpayers get a Standard Deduction of Rs. 40,000 in lieu of conveyance and medical expense
5. 10 per cent long-term capital gains tax on the transfer of listed equity shares exceeding Rs. 1,00,000
6. Deduction for senior citizens increased to Rs. 50,000 for Mediclaim u/s 80D
7. Senior citizens fixed deposits exempt from TDS upto Rs. 20,000
8. Senior citizens fixed deposit interest exempt from TDS up to Rs. 50,000
9. Cess on income tax increased from 3 per cent to 4 per cent

**HIGHLIGHTS OF UNION BUDGET**

- No change in personal income tax slabs and rates;
- Surcharge of 10% on income above Rs. 50 lakh but less than Rs. 1 crore 15% on income above Rs. 1 cr to continue;

- Standard Deduction returns after a decade; Rs. 40,000 to be allowed in lieu of transport allowance and medical expenses;
- Economic growth pegged at 7.2-7.5% for H2 FY18;
- India's average growth in first 3-years of NDA government 7.5%;
- Indian economy size $2.5 trillion; 7th largest in world;
- India is expected to be 5th largest economy very soon;
- Revised Fiscal Deficit estimate for 2017-18 is Rs. 5.95 lakh crore at 3.5% of GDP;
- Fiscal Deficit for FY'19 estimated at 3.3% of GDP;
- Government market borrowing estimated at Rs. 4.07 lakh cr in FY'19 versus Rs. 4.79 lakh cr estimated in 2017–18;
- MSP of all kharif crops to be hiked to at least 1.5 times of their production cost;
- Institutional mechanism proposed to develop policies and practices for price and demand forecast;
- Rs. 2,000 cr fund for developing and upgrading agri marketing infra in 22,000 Grameen Agri Markets and 585 APMCs;
- Allocation for food processing ministry doubled from Rs. 715 crore in RE FY'18 to Rs. 1,400 cr in BE FY'19;
- Kisan Credit Cards extended to fisheries and animal husbandry farmers;
- Agriculture credit disbursal target increased to Rs. 11 lakh crore from Rs. 10 lakh crore in 2017-18;
- Steps announced to deal with air pollution in the Delhi-NCR region;
- 2 crore more toilets to be built under Swachh Bharat Mission;
- Substantial increase in allocation of National Rural Livelihood Mission to Rs. 5,750 cr in FY'19;
- Government announced 2 major initiatives under 'Ayushman Bharat' programme;
- Government to launch a flagship National Health Protection Scheme to cover over 10 crore poor families providing coverage up to Rs. 5 lakh per family every year for hospitalisation;
- Government earmarks Rs. 56,619 cr for SCs and Rs. 39,135 cr for STs in FY'19;
- Sets target of Rs. 3 lakh crore for lending under MUDRA;
- Government to contribute 12% of wages of the new employees in EPF for all sectors for 3 years;
- Facility of fixed-term employment will be extended to all sectors;
- Outlay of Rs. 7,148 crore for textiles sector in 2018-19;
- Fin. Min to leverage India Infrastructure Finance Corporation to help finance major infrastructure projects;
- Redevelopment of 600 major railway stations being taken up;
- Suburban network of 160 kms in Mumbai at an estimated cost of Rs. 17,000 crore being planned;
- Gross budgetary support for Railways hiked to over Rs. 3 lakh crore in 2018-19 from Rs. 2.73 lakh crore in 2017-18;
- Plans to expand airport capacity more than 5 times to handle a billion trips a year;
- Sebi to consider mandating, beginning with large firms, to meet about 1/4th of their financing needs from bond market;
- Allocation on Digital India scheme doubled to Rs. 3,073 cr;
- Rs. 10,000 crore for creation and augmentation of telecom infra;
- Government to come out with policy to introduce toll system on 'pay as you use' basis;
- Proposed expenditure on infra pegged at Rs. 5.97 lakh cr as against Rs. 4.94 lakh crore in FY'18;
- Government to evolve a scheme to assign enterprise a unique ID;
- Capital of the FCI will be restructured to enhance equity and to raise long-term debt;
- DIPAM will come up with more ETF offers including debt ETF;
- Divestment target for FY'19 at Rs. 80,000 crore;
- Bank recapitalisation to pave way for PSBs to lend additional credit of Rs. 5 lakh crore;
- Government to formulate a 'Gold Policy' to develop gold as an asset class;
- Emoluments of President revised to Rs. 5 lakh/ month, Rs. 4 lakh for vice president and Rs. 3.5 lakh for Governors;
- Govt proposes changes to refix salary, constituency allowance, office expenses and allowance payable to Members of Parliament;
- The law will also provide for automatic revision of emoluments of MPs every five years indexed to inflation;
- Rs. 150 cr earmarked for FY'19 for the activities leading to Commemoration of 150th birth anniversary of Mahatma Gandhi;
- Growth in direct taxes up to Jan 15, 2018 is 18.7%;
- Corporate tax reduced to 25% for firms with turnover of Rs. 250 cr in 2016-17;
- Interest income exemption on deposits with banks and post offices for senior citizens increased from Rs. 10,000 to Rs. 50,000;
- Senior citizens will be able to claim benefit of deduction up to Rs. 50,000 annually on health insurance premium and/or general medical expenditure incurred;
- Govt introduces long-term capital gains on equity market; long-term capital gains over Rs 100,000 to be taxed at 10%;
- Education cess increased to 4% from 3%;
- E-assessment of Income Tax Act to eliminate person-to-person contact;

- Customs duty on mobile phones increased from 15% to 20%; also on certain parts of TVs to 15%;
- Govt makes PAN mandatory for any entity entering into a financial transaction of Rs. 2.5 lakh or more;
- Food subsidy to rise to Rs. 1.69 lakh crore in 2018-19 from Rs. 1.4 lakh crore in current year;
- Defence outlay raised to Rs. 2.82 lakh crore in 2018-19 from Rs. 2.67 lakh crore in current year;
- Customs duty on crude edible vegetable oils hiked from 12.5% to 30%; on refined edible vegetable oil from 20% to 35%;
- Customs duty on perfumes, dental hygiene, after-shave, deodorants, room deodorisers, preparations for use on hair doubled to 20%.

# ECONOMIC SURVEY : 2017-2018

The Union Finance Minister Arun Jaitley presented the Economic Survey : 2017–18 in Parliament on January 29, 2018. The Survey suggests that the GDP growth in 2017-18 could be 6.75%, slightly higher than 6.5% estimated by the Central Statistical Organisation (CSO). The surge in exports and reforms such as Goods and Services Tax (GST) and bank recapitalisation yielded higher growth in second half of the financial year 2017-18. Financial year 2018-19 heralds better prospects but risks include rising oil prices and the possibility of capital outflows due to stock market corrections.

The economy is set to grow at 7-7.5% in the next financial year on the back of reviving exports and investment even as the negative effects of demonetisation and the teething troubles of the Goods and Services Tax recede.

**For More Reforms**

Looking ahead, it said reform measures like the implementation of the Insolvency and Bankruptcy Code and the recapitalisation plan for public sector banks would go a long way in addressing the twin balance sheet problem afflicting both corporates and banks, which would in turn further boost economic growth.

As a result of these measures, the dissipating effects of earlier policy actions, and the export uplift from the global recovery, the economy began to accelerate in the second half of the year.

On the fiscal front, the Survey contends that the Centre needs to reappraise its priorities. The onus, it argues, has to be squarely placed on establishing and maintaining policy credibility. To this end, it argues against "setting overly ambitious targets for consolidation, especially in a pre-election year" that are based on optimistic and unrealistic assumptions. Instead, it recommends a "modest consolidation" that would signal a return to the path of calibrated deficit reductions. In doing so, it appears that the Survey is signalling that the government may have to retain the elbow room to stabilise the GST, complete the recapitalisation exercise and, most crucially, support agriculture. Devoting an entire chapter to 'Climate, Climate Change and Agriculture', the CEA and his team have stressed on the dangers climate change poses to the outlook for farm growth. With the potential to reduce annual agricultural incomes - by as much as 20-25% for unirrigated areas - the Survey calls for a range of mitigation measures including extensive provision of efficient irrigation technologies and a wholesale review of the cereal-centric approach to policy. Citing job creation and education as key priorities, the Survey sets out a plan for rapid economic expansion by recommending that policymakers keep their sights trained on strengthening "the only two truly sustainable engines - private investment and exports."

India will require investments of about $4.5 trillion by 2040 to develop infrastructure to improve economic growth and community well-being, according to the Economic Survey 2017-18.

"The current trend shows that India can meet around $3.9 trillion infrastructure investment out of $4.5 trillion. The cumulative figure for India's infrastructure investment gap would be around $526 billion by 2040," it said.

There was massive underinvestment in infrastructure sector until the recent past due to collapse of public private partnerships, especially in power and telecom projects; stressed balance sheets of private companies; issues related to land and forest clearances.

On road sector, the Survey said as on September 2017, out of the 1,263 total ongoing monitored projects across sectors, there were 482 projects in road transport and highways with (original) cost of Rs. 3,17,373.9 crore. Of these, 43 projects face cost overruns and 74 projects time overruns.

Further, it added that the share of Indian Railways in freight movement has been declining over a period of time primarily due to non-competitive tariff structure.

The telecom sector is going through a "stress period with growing losses, debt pile, price war, reduced revenue and irrational spectrum costs," the survey added.

The Economic Survey has suggested that the Goods and Services Tax (GST) Council should comprehensively review 'embedded taxes' and expeditiously eliminate the embedded export taxes to boost India's manufacturing exports.

Referring to the Rs. 6,000 crore package for the apparel sector announced in June 2016, the Survey observed that the largest component of that package was rebates on state levies to offset indirect taxes levied by the states (the VAT) that were 'embedded' in exports. The Survey found that the package in fact increased exports of ready-made garments made of -man-made fibres.

The Goods and Services Tax has resulted in a 50% increase in the number of indirect taxpayers the Economic Survey said, adding the fledgling tax regime has already revealed new data on key aspects such as interstate trade, State-wise exports, and the extent of for malisations in the economy.

Data showed GST had resulted in a significant increase in voluntary compliance, with about 1.7 million registrants who were below the threshold annual turnover limit of Rs. 20 lakh choosing to register for GST nevertheless.

The Economic Survey 2017-18, said farmer income losses from climate change could be between 15% and 18% on an average, rising to anywhere between 20%-25% in unirrigated areas of the country.

"Applying IPCC (Intergovernmental Panel on Climate Change)-predicted temperatures and projecting India's recent trends in precipitation, and assuming no policy responses, give rise to estimates for farm income losses of 15% to 18% on average, rising to 20%-25% for unirrigated areas," pointed out the Survey, adding that at current levels of farm income, that translates into more than Rs. 3,600 per year for the median farm household.

India currently spends far below its economic capacity on research, according to a chapter in the Economic Survey. India spent only 0.5% of its Gross Domestic Product (GDP) on research and development in 2015.

In comparison, China and the U.S. spent 1% and 2.5%, when their per capita GDP were similar to that of India. Currently China's GDP is five times and the U.S.' about eight times that of India.

Commenting that the pattern of household savings was significantly different in 2016-17 as compared with the previous five years, the Survey said while the overall financial savings of the households increased more than 20% in 2016-17, which was significantly higher than the growth witnessed in any of the preceding five years, there was a decline in savings in the form of currency by more than 250% (of about Rs. 5 lakh crore).

The savings of households were channelled into financial assets like bank deposits, life insurance funds and shares and debentures.

The growth of savings in mutual funds registered a phenomenal increase of more than 400% over and above the growth of 126% witnessed in 2015-16.

"Thus within a span of 2 years, savings in the form of mutual funds registered more than 11-fold increase. That this happened in a period when the BSE Sensex increased by an average of just about 1.5% per annum needs to be analysed in more detail," the Survey said.

"As per baseline survey conducted by Ministry of Drinking Water and Sanitation, the number of persons defecating in open in rural areas, which was 55-crore in October, 2014, declined to 25 crore in January, 2018, at a much faster pace compared to the trend observed before 2014," the Survey said. "So far, 296 districts and 3,07,349 villages all over the India have been declared as Open Defecation Free (ODF).

***Following are the highlights of the Economic Survey 2017-18 tabled by Finance Minister Arun Jaitley in the Lok Sabha on January 29, 2018.***

- GDP to grow 7-7.5% in FY19; India to regain fastest growing major economy tag
- GDP growth to be 6.75% in FY2017-18
- Policy vigilance required next fiscal if high oil prices persist or stock prices correct sharply
- Policy agenda for next year — support agriculture, privatise Air India, finish bank recapitalisation
- GST data shows 50% rise in number of indirect taxpayers
- Tax collection by states, local governments significantly lower than those in other federal countries
- Demonetisation has encouraged financial savings
- Insolvency Code being actively used to resolve NPA woes
- Retail inflation averaged 3.3% in 2017-18, lowest in last 6 fiscals
- India needs to address pendency, delays and backlogs in the appellate and judicial arenas
- Urban migration leading to feminisation of farm sector
- Rs. 20,339 cr approved for interest subvention for farmers in current fiscal
- FDI in services sector rises 15% in 2017-18 on reforms
- Fiscal federalism, accountability to help avoid low equilibrium trap
- India's external sector to remain strong on likely improvement in global trade
- Technology should be used for better enforcement of labour laws
- Swachh Bharat initiative improved sanitation coverage in rural areas from 39% in 2014 to 76% in January 2018
- Priority to social infrastructure like education, health to promote inclusive growth
- Centre, states should enhance cooperation to deal with severe air pollution
- Suvey 2017-18 in pink colour to highlight gender issues
- Indian parents often continue to have children till they have the desired number of sons

# 69th REPUBLIC DAY

India celebrates its 69th Republic Day , Prime Minister Narendra Modi hosts 10 leaders of the Association of Southeast Asian Nations or ASEAN as guests of honour at the ceremonial parade being held at Rajpath. The parade is presided over by President Ram Nath Kovind.

The Republic Day parade began at the Amar Jawan Jyoti at India Gate where PM Modi paid homage to the soldiers who died in the line of duty. The National Anthem was played with a 21-gun salute after the unfurling of the tricolour. India's military is on full display during the annual celebrations.

# PADMA AWARDS 2018

Padma Awards - one of the highest civilian Awards of the country, are conferred in three categories, namely, Padma Vibhushan, Padma Bhushan and Padma Shri. The Awards are given in various disciplines/ fields of activities, viz.- art, social work, public affairs, science and engineering, trade and industry, medicine, literature and education, sports, civil service, etc. **'Padma Vibhushan'** is awarded for exceptional and distinguished service; **'Padma Bhushan'** for distinguished service of high order and **'Padma Shri'** for distinguished service in any field. The awards are announced on the occasion of Republic Day every year.

These awards are conferred by the President of India at ceremonial functions which are held at Rashtrapati Bhawan usually around March/ April every year. This year the President of India has approved conferment of 85 Padma Awards including two duo cases (in a duo case, the award is counted as one) as per list below. The list comprises 3 Padma Vibhushan, 9 Padma Bhushan and 73 Padma Shri Awards. 14 of the awardees are women and the list also includes 16 persons from the category of Foreigners/NRI/PIO/OCI and 3 Posthumous awardees.

| **PADMA VIBHUSHAN** | | | |
|---|---|---|---|
| **Sl. No** | **Name** | **Field** | **State** |
| 1. | Shri Illaiyaraja | Art-Music | Tamil Nadu |
| 2. | Shri Ghulam Mustafa Khan | Art-Music | Maharashtra |
| 3. | Shri Parameswaran Parameswaran | Literature and Education | Kerala |
| **PADMA BHUSHAN** | | | |
| **Sl. No** | **Name** | **Field** | **State** |
| 4. | Shri Pankaj Advani | Sports- Billiards/Snooker | Karnataka |
| 5. | Shri Philipose Mar Chrysostom | Others-Spiritualism | Kerala |
| 6. | Shri Mahendra Singh Dhoni | Sports-Cricket | Jharkhand |
| 7. | **(Foreigner/Posthumous)** | Shri Alexander Kadakin | Russia |
| | | Public Affairs | |
| 8. | Shri Ramachandran Nagaswamy | Others-Archaeology | Tamil Nadu |
| 9. | Shri Ved Prakash Nanda **(OCI)** | Literature and Education | USA |
| 10. | Shri Laxman Pai | Art-Painting | Goa |
| 11. | Shri Arvind Parikh | Art-Music | Maharashtra |
| 12. | Ms. Sharda Sinha | Art-Music | Bihar |
| **PADMA SHRI** | | | |
| **Sl. No** | **Name** | **Field** | **State** |
| 13. | Shri Abhay Bang **(Duo)** | Medicine | Maharashtra |
| | Ms. Rani Bang **(Duo)** | Medicine | Maharashtra |
| 14. | Shri Damodar Ganesh Bapat | Social Work | Chhattisgarh |
| 15. | Shri Prafulla Govinda Baruah | Literature and Education-Journalism | Assam |
| 16. | Shri Mohan Swaroop Bhatia | Art-Folk Music | Uttar Pradesh |
| 17. | Shri Sudhanshu Biswas | Social Work | West Bengal |
| 18. | Ms. Saikhom Mirabai Chanu | Sports-Weightlifting | Manipur |
| 19. | Shri Pandit Shyamlal Chaturvedi | Literature and Education-Journalism | Chhattisgarh |

| | | | |
|---|---|---|---|
| 20. | Shri Jose Ma Joey Concepcion III **(Foreigner)** | Trade & Industry | Philippines |
| 21. | Ms. Langpoklakpam Subadani Devi | Art-Weaving | Manipur |
| 22. | Shri Somdev Devvarman | Sports-Tennis | Tripura |
| 23. | Shri Yeshi Dhoden | Medicine | Himachal Pradesh |
| 24. | Shri Arup Kumar Dutta | Literature and Education | Assam |
| 25. | Shri Doddarange Gowda | Art-Lyrics | Karnataka |
| 26. | Shri Arvind Gupta | Literature and Education | Maharashtra |
| 27. | Shri Digamber Hansda | Literature and Education | Jharkhand |
| 28. | Shri Ramli Bin Ibrahim **(Foreigner)** | Art-Dance | Malaysia |
| 29. | Shri Anwar Jalalpuri **(Posthumous)** | Literature and Education | Uttar Pradesh |
| 30. | Shri Piyong Temjen Jamir | Literature and Education | Nagaland |
| 31. | Ms. Sitavva Joddati | Social Work | Karnataka |
| 32. | Ms. Malti Joshi | Literature and Education | Madhya Pradesh |
| 33. | Shri Manoj Joshi | Art-Acting | Maharashtra |
| 34. | Shri Rameshwarlal Kabra | Trade & Industry | Maharashtra |
| 35. | Shri Pran Kishore Kaul | Art | Jammu and Kashmir |
| 36. | Shri Bounlap Keokangna **(Foreigner)** | Others-Architecture | Laos |
| 37. | Shri Vijay Kichlu | Art-Music | West Bengal |
| 38. | Shri Tommy Koh **(Foreigner)** | Public Affairs | Singapore |
| 39. | Ms. Lakshmikutty | Medicine-Traditional | Kerala |
| 40. | Ms. Joyshree Goswami Mahanta | Literature and Ecucation | Assam |
| 41. | Shri Narayan Das Maharaj | Others-Spiritualism | Rajasthan |
| 42. | Shri Pravakara Maharana | Art-Sculpture | Odisha |
| 43. | Shri Hun Many **(Foreigner)** | Public Affairs | Cambodia |
| 44. | Ms. Nouf Marwaai **(Foreigner)** | Others- Yoga | Saudi Arabia |
| 45. | Shri Zaverilal Mehta | Literature and Education-Journalism | Gujarat |
| 46. | Shri Krishna Bihari Mishra | Literature and Education | West Bengal |
| 47. | Shri Sisir Purushottam Mishra | Art-Cinema | Maharashtra |
| 48. | Ms. Subhasini Mistry | Social Work | West Bengal |
| 49. | Shri Tomio Mizokami **(Foreigner)** | Literature and Education | Japan |
| 50. | Shri Somdet Phra Maha Muniwong **(Foreigner)** | Others-Spiritualism | Thailand |
| 51. | Shri Keshav Rao Musalgaonkar | Literature and Education | Madhya Pradesh |
| 52. | Dr Thant Myint – U **(Foreigner)** | Public Affairs | Myanmar |
| 53. | Ms. V Nanammal | Others-Yoga | Tamil Nadu |
| 54. | Ms. Sulagitti Narasamma | Social Work | Karnataka |
| 55. | Ms. Vijayalakshmi Navaneethakrishnan | Art-Folk Music | Tamil Nadu |
| 56. | Shri I Nyoman Nuarta **(Foreigner)** | Art- Sculpture | Indonesia |
| 57. | Shri Malai Haji Abdullah | Social Work | Brunei |
| | Bin Malai Haji Othman **(Foreigner)** | | Darussalam |
| 58. | Shri Gobaradhan Panika | Art-Weaving | Odisha |
| 59. | Shri Bhabani Charan Pattanaik | Public Affairs | Odisha |
| 60. | Shri Murlikant Petkar | Sports-Swimming | Maharashtra |
| 61. | Shri Habibullo Rajabov **(Foreigner)** | Literature and Education | Tajikistan |
| 62. | Shri M R Rajagopal | Medicine-Palliative Care | Kerala |
| 63. | Shri Sampat Ramteke **(Posthumous)** | Social Work | Maharashtra |
| 64. | Shri Chandra Sekhar Rath | Literature and Education | Odisha |
| 65. | Shri S S Rathore | Civil Service | Gujarat |
| 66. | Shri Amitava Roy | Science and Engineering | West Bengal |
| 67. | Shri Sanduk Ruit **(Foreigner)** | Medicine-Ophthalmology | Nepal |
| 68. | Shri R Sathyanarayana | Art-Music | Karnataka |

| | | | |
|---|---|---|---|
| 69. | Shri Pankaj M Shah | Medicine-Oncology | Gujarat |
| 70. | Shri Bhajju Shyam | Art-Painting | Madhya Pradesh |
| 71. | Shri Maharao Raghuveer Singh | Literature and Education | Rajasthan |
| 72. | Shri Kidambi Srikanth | Sports-Badminton | Andhra Pradesh |
| 73. | Shri Ibrahim Sutar | Art-Music | Karnataka |
| 74. | Shri Siddeshwara Swamiji | Others-Spiritualism | Karnataka |
| 75. | Ms. Lentina Ao Thakkar | Social Work | Nagaland |
| 76. | Shri Vikram Chandra Thakur | Science and Engineering | Uttarakhand |
| 77. | Shri Rudrapatnam Narayanaswamy Tharanathan **(Duo)** | Art-Music | Karnataka |
| | Shri Rudrapatnam Narayanaswamy Thyagarajan **(Duo)** | Art-Music | Karnataka |
| 78. | Shri Nguyen Tien Thien **(Foreigner)** | Others-Spiritualism | Vietnam |
| 79. | Shri Bhagirath Prasad Tripathi | Literature and Education | Uttar Pradesh |
| 80. | Shri Rajagopalan Vasudevan | Science and Engineering | Tamil Nadu |
| 81. | Shri Manas Bihari Verma | Science and Engineering | Bihar |
| 82. | Shri Panatawane Gangadhar Vithobaji | Literature and Education | Maharashtra |
| 83. | Shri Romulus Whitaker Conservation | Others-Wildlife | Tamil Nadu |
| 84. | Shri Baba Yogendra | Art | Madhya Pradesh |
| 85. | Shri A Zakia | Literature and Education | Mizoram |

## FILMFARE AWARDS 2018

Bollywood came together to celebrate the industry's talent at 63rd Jio Filmfare Awards 2018, held on January 20, in Mumbai. Superstar Shah Rukh Khan and filmmaker Karan Johar hosted the event, which witnessed some amazing performances by stars like Akshay Kumar, Ranveer Singh, Ayushmann Khurrana, Parineeti Chopra and others. Sonam Kapoor, R Madhavan, Arjun Kapoor, Alia Bhatt, Shahid Kapoor, Saqib Saleem, Preity Zinta, Rekha, Jaya Bachchan, Madhuri Dixit, Kajol, Sunny Leone walked the red carpet.

- Best Film: **Hindi Medium**
- Critics' Award for Best Film: **Newton**
- Best Actor in a Leading Role (Female): **Vidya Balan** for Tumhari Sulu
- Best Actor in a Leading Role (Male): **Irrfan Khan** for Hindi Medium
- Critics' Award for Best Actor (Female): **Zaira Wasim** for Secret Superstar
- Critics' Award for Best Actor (Male): **Rajkummar Rao** for Trapped
- Best Director: **Ashwiny Iyer Tiwari** for Bareilly Ki Barfi
- Best Debut Director: **Konkona Sen Sharma** for A Death in the Gunj
- Best Actor In A Supporting Role (Male): **Rajkummar Rao** for Bareilly Ki Barfi
- Best Actor in a Supporting Role (Female): **Meher Vij** for Secret Superstar
- Lifetime Achievement Award: **Bappi Lahiri**
- Best Dialogue: **Hitesh Kewalya** for Shubh Mangal Saavdhan
- Best Screenplay: **Shubhashish Bhutiani** for Mukti Bhawan
- Best Original Story: **Amit Masurkar** for Newton
- Best Actor (Male) in a Short Film: **Jackie Shroff** for Khujli
- Best Actor (Female) in a Short Film: **Shefali Shah** for Juice
- People's Choice Award for Best Short Film: **Anahut**
- Best Short Film (Fiction): **Juice**
- Best Short Film (Non Fiction): **Invisible Wings**
- Best Music Album: **Pritam** for Jagga Jasoos
- Best Playback Singer (Male): **Arijit Singh** for Roke Na Ruke Naina (Badrinath Ki Dulhania)
- Best Playback Singer (Female): **Meghna Mishra** for Nachdi Phira (Secret Superstar)
- Best Lyrics: **Amitabh Bhattacharya** for Dil Ullu Ka Pattha Hai (Jagga Jasoos)
- Best Background Score: **Pritam** for Jagga Jasoos
- Best Sound Design: **Anish John** for Trapped
- Best Choreography: **Vijay Ganguly** and **Ruel Dausan Varindani** for Galti Se Mistake (Jagga Jasoos)
- Best Action: **Tom Struthers** for Tiger Zinda Hai
- Best Cinematography: **Sirsha Ray** for A Death In The Gunj
- Best Editing: **Nitin Baid** for Trapped
- Best Costume: **Rohit Chaturvedi** for A Death In The Gunj
- Best Production Design: **Parul Sondh** for Daddy

# NOBEL PRIZES 2017

The 2017 Nobel Prizes in various fields were announced in October 2017. Nobel Prizes are considered the most prestigious honour worldwide and the awards are conferred in December every year. The 2017 Nobel Peace Prize was awarded to the International Campaign to Abolish Nuclear Weapons (ICAN). The youngest laureate of Nobel Peace Prize in Malala Yousafzai of Pakistan who was honoured with the prize in 2014 when she was 17-year old. Joseph Rotblat is the oldest laureate who received the Nobel Peace Prize in 1995 at the age of 87 years.

## PEACE

The 2017 Nobel Peace Prize was awarded to the International Campaign to Abolish Nuclear Weapons (ICAN) on October 6, 2017 for its work to draw attention to the catastrophic humanitarian consequences of any use of nuclear weapons.

Founded in Vienna in 2007 on the fringes of an international conference on the nuclear non-proliferation treaty, ICAN (the International Coalition to Abolish Nuclear Weapons) has mobilised campaigners and celebrities alike in its cause.

## LITERATURE

The Nobel Prize in Literature for 2017 was awarded to British novelist and screenwriter Kazuo Ishiguro on October 5, 2017 for his emotionally reasonating prose style and his inventive subversion of literary genres.

Mr. Ishiguro, 62, is best known for his novels *The Remains of the Day,* about a butler serving an English lord in the years leading up to the Second World War, and *Never Let Me Go,* a melancholy dystopian love story set in a British boarding school. After studying English and philosophy at the University of Kent, in Canterbury, he spent a year writing fiction, eventually gaining a master of arts in creative writing under the tutelage of writers such as Malcolm Bardbury and Angela Carter. He has also written lyrics for the American *jazz* singer Stacey Kent and plays the guitar.

## PHYSICS

Three United States-based scientists – Rainer Weiss of the Massachusetts Institute of Technology and Barry Barish and Kip S Throne of the California Institute of Technology on October 3, 2017 won the 2017 Nobel Prize in Physics for their contributions to detection of the gravitational waves arising from the collision between two black holes.

Predicted by Albert Einstein a century ago as part of his theory of general relativity, but only detected in 2015, gravitational waves are "ripples" in space-time, as the theoretical fabric of the cosmos is called.

## CHEMISTRY

A trio of Swiss, American and British scientists — Jacques Dubochet, Joachim Frank and Richard Henderson — won the 2017 Nobel Prize in Chemistry on October 4, 2017 for the development of cryo-electron microscopy (cryo-EM), which simlifies and improves the imaging of biomolecules.

The work by Jacques Dubochet, Joachim Frank and Richard Henderson makes it possible to image proteins and other molecules after freezing them rapidly to preserve their shape, providing a powerful new tool for medical research.

The new approach fills a previously blank space by generating images of everything – from proteins that cause antibiotic resistance to the surface of the Zika virus.

## MEDICINE or PHYSIOLOGY

Three Americans — Jeffery C Hall, Michael Rosbash and Michael W Young — were jointly awarded the 2017 Nobel Prize in Medicine or Physiology on October 2, 2017 for their discoveries about the body's biological clock, opening up whole new fields of research and raising awareness about the importance of getting enough sleep. The three scientists won the 9-million-kronor ($1.1 million) prize for their work on finding genetic mechanisms behind circadian rhythms, which adapt the workings of the body to different phases of the day, influencing sleep, behaviour, hormone levels, body temperature and metabolism. The work was done using fruit flies.

## ECONOMICS

U.S. economist Richard Thaler won the 2017 Nobel Economics Prize for his contributions in the field of behavioural economics, showing how human traits affect supposedly rational markets.

Thaler brought to prominence the idea of "nudge" economics, where humans are subtly guided toward beneficial behaviors without heavy-handed compulsion, the theme of a 2008 book he co-wrote which caught the eye of policymakers around the world.

In his award citation, the Academy said his research had harnessed psychologically realistic assumptions in analyses of economic decision-making, exploring the consequences of limited rationality, social preferences, and lack of self-control.

"In total, Richard Thaler's contributions have built a bridge between the economic and psychological analyses of individual decision-making," the award-giving body said on announcing the 9 million Swedish crown ($1.1 million) prize.

"His empirical findings and theoretical insights have been instrumental in creating the new and rapidly expanding field of behavioral economics, which has had a profound impact on many areas of economic research and policy." ❒❒❒

# SET 1

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 05.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word pair from the given alternatives :
Power : Watt : : ? : ?
(1) Pressure : Newton
(2) Force : Pascal
(3) Resistance : Mho
(4) Work : Joule

**2.** In the following question, select the related letters from the given alternatives :
NPBG : OQCH : : AJOT : ?
(1) BKPU (2) BUPK
(3) BHKP (4) HBKU

**3.** In the following question, select the related number from the given alternatives :
101 : 10201 : : 107 : ?
(1) 10707 (2) 10749
(3) 11449 (4) 11407

**4.** In the following question, select the odd word from the given alternatives :
(1) Lion (2) Leopard
(3) Snake (4) Tiger

**5.** In the following question, select the odd letters from the given alternatives :
(1) NPR (2) TVW
(3) FHJ (4) KMO

**6.** In the following question, select the odd number from the given alternatives :
(1) 69 (2) 59
(3) 61 (4) 53

**7.** Arrange the given words in the sequence in which they occur in the dictionary.
1. Ropped 2. Roster
3. Roasted 4. Road
5. Roller
(1) 35412 (2) 45312
(3) 34512 (4) 43512

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
BCF, CDG, DEH, ?
(1) EFI (2) EFG
(3) DFI (4) EGI

**9.** In the following question, select the missing number from the given alternatives :
2, 5, 12, 27, ?
(1) 53 (2) 56
(3) 57 (4) 58

**10.** If 'P 3 Q' means 'P is daughter of Q', 'P 5 Q' means 'P is father of Q', 'P 7 Q' means 'P is mother of Q' and 'P 9 Q' means 'P is sister of Q', then how is J related to K in J 3 L 9 N 3 O 5 K?
(1) Mother (2) Wife
(3) Niece (4) Daughter

**11.** Rakhi got engaged 10 years ago. Rakhi's present age is $\frac{5}{3}$ of her age at the time of engagement. If the present age of Rakhi's mother is twice that of present age of Rakhi, then what was her mother's age (in years) at the time of her engagement?
(1) 50 (2) 40
(3) 30 (4) 60

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
SUSPENSEFULNESS
(1) SENSE (2) FUELS
(3) USEFUL (4) FULLNESS

**13.** In a certain code language, "BAD" is written as "7" and "SAP" is written as "9". How is "BAN" written in that code language?
(1) 8 (2) 3
(3) 4 (4) 6

**14.** In the following question, correct the equation by interchanging any two signs.
9 × 3 + 8 ÷ 4 – 7 = 28
(1) × and – (2) + and –
(3) ÷ and + (4) × and ÷

**15.** If 4 * 5 % 3 = 8000 and 2 * 3 % 2 = 36, then
4 * 3 % 3 = ?
(1) 432 (2) 1728
(3) 36 (4) 144

**16.** In the followig question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

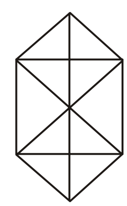
| | 3 | |
|---|---|---|
| 2 | 31 | 1 |
| | 5 | |

| | 4 | |
|---|---|---|
| 2 | 145 | 6 |
| | 3 | |

| | 2 | |
|---|---|---|
| 1 | ? | 7 |
| | 5 | |

(1) 43 (2) 49
(3) 59 (4) 71

**17.** How many triangles are there in the given figure ?



(1) 20 (2) 22
(3) 28 (4) 32

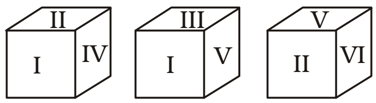
**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

**Statements :**
I. Some pens are pencils.
II. All pencils are erasers.

**Conclusions :**
I. Some pens are erasers.
II. No pen is eraser.
III. Some erasers are pencils.
(1) Only Conclusion II follows.
(2) Only Conclusions I and II follow.

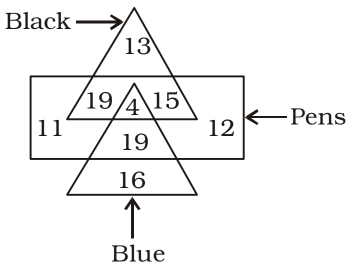
(3) Only Conclusions I and III follow.
(4) No Conclusion follows.

**19.** Three positions of a cube are shown below. What will come opposite to face containing 'I'?




(1) VI (2) IV
(3) II (4) V

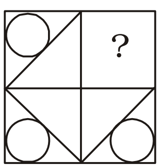
**20.** In the given figure, how many pens are blue?



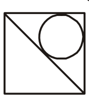
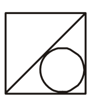

(1) 23 (2) 19
(3) 12 (4) 15

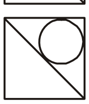
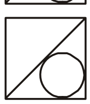
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



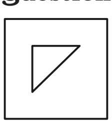

**Answer Figures :**

(1)  (2) 

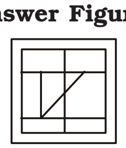
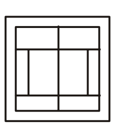
(3)  (4) 

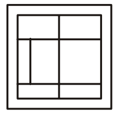
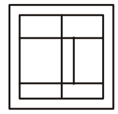
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



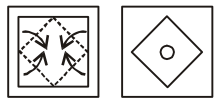
**Answer Figures :**

(1)  (2) 

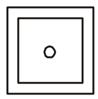
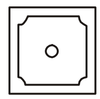
(3)  (4) 

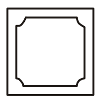
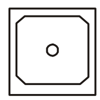
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



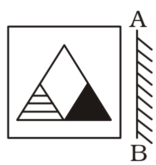
**Answer Figures :**

(1)  (2) 

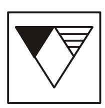
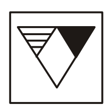
(3)  (4) 

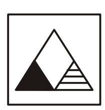
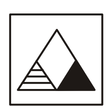
**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 01, 34 etc and 'Z' can be represeted by 65, 99 etc. Similarly, you have to identify the set for the word **'BLAND'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | A | K | B | L | C |
| 1 | B | A | C | K | L |
| 2 | L | C | K | B | A |
| 3 | C | B | L | A | K |
| 4 | K | L | A | C | B |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | N | O | P | S | D |
| 6 | P | D | S | N | O |
| 7 | O | P | N | D | S |
| 8 | D | S | O | P | N |
| 9 | S | N | D | O | P |

(1) 10, 14, 00, 68, 79
(2) 31, 41, 33, 96, 86
(3) 44, 20, 42, 88, 59
(4) 23, 32, 24, 55, 66

## GENERAL AWARENESS

**26.** At which rate, Reserve Bank of India borrows money from commercial banks?
(1) Bank Rate
(2) Repo Rate
(3) Reverse Repo Rate
(4) Statutory Liquidity Rate

**27.** Movement along the supply curve is known as ______ .
(1) Contraction of supply
(2) Expansion of supply
(3) Increase in supply
(4) Expansion and contraction of supply

**28.** What is the minimum age required to become vice-president of India?
(1) 30 years (2) 35 years
(3) 40 years (4) 37 years

**29.** Which of the following "writ" of the High Court or the Supreme Court is issued to restrain a person from holding a public office which he is not entitled to?
(1) Centiorari
(2) Mandamus

(3) Prohibition
(4) Quo Warranto

**30.** Who was the son of Chandragupta Maurya?
(1) Bindusara
(2) Chandragupta II
(3) Ashoka
(4) Binbsara

**31.** Which dynasty came to power in India after the Tughlaq dynasty?
(1) The Guptas
(2) The Khiljis
(3) The Mughals
(4) The Sayyids

**32.** Which planet is considered as the Dwarf planet?
(1) Earth (2) Jupiter
(3) Pluto (4) Saturn

**33.** Sandstone is which type of rock?
(1) Calcareous Rock
(2) Igneous Rock
(3) Metamorphic Rock
(4) Sedimentary Rock

**34.** Wheat is a ______.
(1) Creeper (2) Herb
(3) Shrub (4) Tree

**35.** Snakes, turtle, lizards and crocodiles falls under which category of animals?
(1) Pisces (2) Amphibian
(3) Reptilian (4) Aves

**36.** Which of the following instrument is used to measure Soil Water Tension?
(1) Photometer
(2) Pyrometer
(3) Psychrometer
(4) Tensiometer

**37.** What is the SI unit of Force?
(1) Pascal (2) Boyle
(3) Newton (4) Watt

**38.** Which one of the following is a bad Thermal Conductor?
(1) Aluminium
(2) Copper (3) Glass
(4) Silver

**39.** Which of the following stores data permanently in a computer?
(1) ALU
(2) Cache Memory
(3) RAM (4) ROM

**40.** Rusting is _____.
(1) Electrolysis
(2) Oxidation
(3) Redoxr eaction (Oxidation and Reduction)
(4) Reduction

**41.** Which amongst the following is not a Cation?
(1) Aluminiumion
(2) Copperion
(3) Sulphateion
(4) Zincion

**42.** Which of the following is not a component of Smog?
(1) Volatile organic compounds
(2) Nitrogen Oxide
(3) Sulphur dioxide
(4) Chlorine oxide

**43.** NITI Aayog has been formed to replace which of the following institution?
(1) Planning Commission
(2) IRDA
(3) Department of Telecommunications (DoT)
(4) Department of Information Technology

**44.** Who invented first working laser?
(1) A. H. Taylor
(2) W. K. Roentgen
(3) T. H. Maiman
(4) Fred Morrission

**45.** Which of the following venue hosted its first ever test match on 9th November, 2016 which was played between India and England?
(1) JSCA International Stadium Complex, Ranchi
(2) Saurashtra Cricket Association Stadium, Rajkot
(3) Himachal Pradesh Cricket Association Stadium, Dharamshala
(4) Holkar Cricket Stadium, Indore

**46.** Match the following :

| Artist | Art form |
|---|---|
| 1. Gauri Shank Devilal | a. Flute |
| 2. Hari Prasad Chaurasia | b. Paintig |
| 3. M.F. Hussain | c. Kathak |
| 4. Zakir Hussain | d. Tabla |

(1) 1-a, 2- d, 3-b, 4-c
(2) 1-b, 2-c, 3-a, 4-d
(3) 1-c, 2-a, 3-b,4-d
(4) 1-c, 2-b, 3-a, 4-d

**47.** Who is the only Indian cricketer to have received the Polly Umrigar award 3 times?
(1) Sachin Tendulkar
(2) Virender Sehwag
(3) Virat Kohli
(4) Ravichandran Ashwin

**48.** Who is the author of the book titled "The Sellout"?
(1) Paul Beatty
(2) Arvind Adiga
(3) Elenor Catton
(4) Howard Jacobson

**49.** Which country was designated as the major defence partner of USA in December, 2016?
(1) Canada
(2) Israel
(3) India
(4) United Kingdom

**50.** With which country India did its seventh edition of bilateral EKUVERIN Exercise 2016 at Kadhdhoo?
(1) Nepal (2) Pakistan
(3) Maldives (4) Bhutan

## QUANTITATIVE APTITUDE

**51.** If $x$ and $y$ are the two digits of the number $347xy$ such that the number is completely divisible by 80, then what is the value of $x + y$?
(1) 2 (2) 4
(3) 6 (4) 8

**52.** A, B and C can complete a work in 20, 24 and 30 days respectively. All three of them start together but after 4 days A left the job and B left the job 6 days before the work was completed. C completed the remaining work alone. In how many days was the total work completed?
(1) 10 (2) 12
(3) 14 (4) 16

**53.** A solid sphere of diameter 17.5 cm is cut into two equal halves. What will be the increase (in $cm^2$) in the total surface area?
(1) 289 (2) 361.5
(3) 481.25 (4) 962.5

**54.** After a discount of 34% an article is sold for Rs. 3168. What is the marked price (in Rs.) of the article?
(1) 4750 (2) 4800
(3) 4850 (4) 5000

**55.** If $\frac{3}{7}P = \frac{4}{11}Q$, then what is the ratio of P and Q respectively?
(1) 12 : 77 (2) 12 : 33
(3) 28 : 33 (4) 3 : 28

**56.** The average of 17 results is 60. If the average of first 9 results is 57 and that of the last 9 results is 65, then what will be the value of 9th result?
(1) 39 (2) 78
(3) 117 (4) 156

**57.** For an article the profit is 170% of the cost price. If the cost price increases by 20% but the selling price remains same, then what is the new profit per cent?
(1) 41 (2) 50
(3) 75 (4) 12 5

**58.** 32% of a number exceeds 17% of the same number by 120. What is the value of the number?
(1) 900 (2) 860
(3) 940 (4) 800

**59.** A boat goes 15 km upstream and $10\frac{1}{2}$ km downstream in 3 hours 15 minutes. It goes 12 km upstream and 14 km downstream in 3 hours. What is the speed of the boat in still water? (in kmph)
(1) 4 (2) 6
(3) 10 (4) 14

**60.** A person lent certain sum of money at 5% per annum simple interest and in 15 years the interest amounted to Rs. 250 less than the sum lent. What was the sum lent (in Rs.)?
(1) 1000 (2) 1500
(3) 2400 (4) 3000

**61.** If $x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$, then what is the vlaue of $x + \frac{1}{x}$ ?
(1) 14 (2) $8\sqrt{3}$
(3) 0 (4) 18

**62.** If $x = 2+\sqrt{3}$, thenn what is the vlaue of $\sqrt{2x} + \frac{1}{\sqrt{2x}}$ ?
(1) $2\sqrt{3}$ (2) $3\sqrt{3}$
(3) $\frac{(3\sqrt{3}+1)}{2}$ (4) $2\sqrt{3}+1$

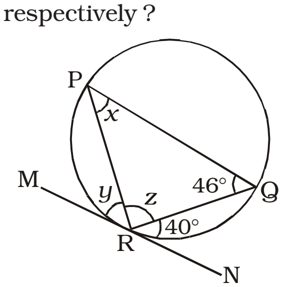
**63.** If $x + \frac{1}{x} = 4$, then what is the value of $x^6 + \frac{1}{x^6}$ ?
(1) 52 (2) 256
(3) 1026 (4) 2702

**64.** If $y = \frac{2-x}{1+x}$, then what is the value of $\frac{1}{y+1} + \frac{2y+1}{y^2-1}$ ?
(1) $\frac{(1+x)(2-x)}{2x-1}$
(2) $\frac{(1-x)(2+x)}{x-1}$
(3) $\frac{(1+x)(2-x)}{1-2x}$
(4) $\frac{(1+x)(1-2x)}{2-x}$

**65.** In the triangle ABC, ∠BAC = 50° and the bisectors of ∠ABC and ∠ACB meets at P. What is the value (in degrees) of ∠BPC?
(1) 100 (2) 105
(3) 115 (4) 125

**66.** Two circles of same radius intersect each other at P and Q. If the length of the common chord is 30 cm and distance between the centres of the two circles is 40 cm, then what is the radius (in cm.) of the circles?
(1) 25 (2) $25\sqrt{2}$
(3) 50 (4) $50\sqrt{2}$

**67.** In the given figure, ∠QRN = 40°, ∠PQR = 46° and MN is a tangent at R. What is the value (in degrees) of $x$, $y$ and $z$ respectively ?




(1) 40, 46, 94 (2) 40, 50, 90
(3) 46, 54, 80
(4) 50, 40, 90

**68.** In ΔPQR, ∠R = 54°, the perpendicular bisector of PQ at S meets QR at T. If ∠TPR = 46°, then what is the value (in degrees) of ∠PQR?
(1) 25 (2) 40
(3) 50 (4) 60

**69.** What is the simplified value of $\frac{\cot A + \tan B}{\cot B + \tan A}$?
(1) tanB cotA
(2) tanA cotB
(3) tanA tanB
(4) cotA cotB

**70.** What is the simplified value of $\left(\frac{1}{\operatorname{cosec} A + \cot A}\right)^2$ ?
(1) sec A + tan A
(2) $\frac{(1-\cos A)}{(1-\cos A)}$
(3) $\frac{(1-\operatorname{cosec} A)}{(1+\operatorname{cosec} A)}$
(4) sin A

**71.** If $\cos^2\theta - \sin\theta = \frac{1}{4}$, then what is the value of sin θ?
(1) –1 (2) $\frac{1}{2}$
(3) 1 (4) $\frac{3}{2}$

**Directions (72–75) :** The table given below shows the nnumber of students of a college studying Arts, Science, Commerce and Businness for given 5 years.

| Year | Arts | Science | Commerce | Business |
|---|---|---|---|---|
| 2012 | 48 | 105 | 148 | 32 |
| 2013 | 56 | 123 | 136 | 30 |
| 2014 | 64 | 125 | 144 | 36 |
| 2015 | 78 | 148 | 156 | 36 |
| 2016 | 92 | 161 | 168 | 48 |

**72.** What is the percentage increase in number of students of Commerce from 2012 to 2016?
(1) 11.16 (2) 17.28
(3) 13.51 (4) 15.67

**73.** What is the simple annual growth rate (in %) of the number of students of Business from 2012 to 2016?

(1) 10 (2) 12 .5
(3) 15 (4) 17.5

**74.** What is the ratio of average number of students studying Arts per year and average number of students studying Science per year?
(1) 169 : 331 (2) 66 : 169
(3) 127 : 261 (4) 32 : 75

**75.** Which year shows the maximum percentage increase in the total number of students in these four subjects over the previous year?
(1) 2013 (2) 2014
(3) 2015 (4) 2016

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The two men were (1)/ quarrelling with one another (2)/ claiming the same watch as their own. (3)/ No Error (4)

**77.** Everybody knows (1)/ that Bhutan is the most peaceful (2)/ of all other countries of the world. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** The higher you climb, the more difficult it _____ to breathe.
(1) became
(2) becomes
(3) has become
(4) is becoming

**79.** Neha has been crying _____ morning.
(1) from (2) of
(3) since (4) till

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Opulent**
(1) Fake (2) Gloomy
(3) Rich (4) Selfish

**81. Morose**
(1) Flatter (2) Gloomy
(3) Friendly (4) Savvy

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Irk**
(1) Attract
(2) Discourage
(3) Irritate
(4) Please

**83. Grotesque**
(1) Free (2) Odd
(3) Plain (4) Queer

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To keep the wolf from the door**
(1) Avoid starvation
(2) Crack the deal
(3) Entry prohibited
(4) Have a pleasant tour

**85. Teething problems**
(1) Oral problems
(2) Problems at the start of a new project
(3) Problems for quite a long time in adjusting in the new place
(4) Problem of having good dentist

**Directions (86–87) :** Improve the bracketed part of each sentences.

**86.** She did not like to have coffee **(nor I did)**.
(1) neither I liked it
(2) nor did I
(3) nor I like it
(4) No improvement

**87.** Taj Mahal is **(a worth seeing monument)** in Agra.
(1) a monument to see its worth
(2) a monument worth seeing
(3) one of worth seeing monuments
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. That which cannot be corrected**
(1) Impregnable
(2) Immolation
(3) Incorrigible
(4) Ineligible

**89. A person who is blamed for the wrong doings of others**
(1) Bursar
(2) Captor
(3) Phlegmatic
(4) Scapegoat

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Conceive (2) Leisure
(3) Neice (4) Reign

**91.** (1) Dictionory (2) Irrelevant
(3) Perishable (4) Tangible

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. It had been umpteen years since we had seen each other.
Q. One dull dark day in autumn, I was travelling on horseback through a dreary stretch of countryside.
R. This was the house of Roderick Usher, who had been my childhood pal.
S. At night fall, I came in sight of the house of Usher.
(1) PQSR (2) PSQR
(3) QSRP (4) QRSP

**93.** P. According to various estimates, between 1942 and 1944 there were approximately 400 victims of this practice daily in Warsaw alone, with numbers on some day reaching several thousands.
Q. A common German pract ice in occupied Poland was to round up random civilians on the streets of Polish cities.
R. For example, on 19th September 1942 close to 3000 men and women were transported by train to Germany – they had been

caught in the massive round-ups all over Warsaw the previous two days.

S. The term, “lapanka” carried a sardonic connotation from the word’s earlier use for the children’s game known in English as “tag”.

(1) SQRP (2) SRPQ
(3) QSPR (4) QPRS

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**An elephant may be helped even by an ant.**

(1) An ant can even help a elephant.
(2) An ant may even help a elephant.
(3) Even an ant may help an elephant.
(4) Even an ant ought to help an elephant.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Direct/Indirect speech.

**“Please don’t cry”, he said.**

(1) He begged that I should not cry.
(2) He begged me not to cry.
(3) He said to please him and not cry.
(4) He told me to not to cry.

**Directions (96–100) :** In the following questions, each sentence given with blank(s) is to be filled in with an appropriate word. Select the correct alternative out of the four.

The **(96)** of lectures could be enhanced by introducing the lecture with a brief review of the work **(97)**, it should also be indicated how the day’s lecture **(98)** into the course pattern. A lecture should **(99)** be presented in one unbroken discourse. Unless exceptionally interesting, a long lecture strains the **(100)** of a concentrated listening, causing intermittent wandering of attention and loss of continuity in thought.

**96.** (1) condition
(2) effectiveness
(3) efficiency
(4) interest

**97.** (1) ascending (2) preceding
(3) reciting (4) succeeding

**98.** (1) adds (2) fits
(3) gets (4) lets

**99.** (1) continuously
(2) often (3) randomly
(4) seldom

**100.** (1) authority (2) capacity
(3) comfortability
(4) reasonability

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (1) | **3.** (3) | **4.** (3) |
| **5.** (2) | **6.** (1) | **7.** (4) | **8.** (1) |
| **9.** (4) | **10.** (3) | **11.** (2) | **12.** (4) |
| **13.** (1) | **14.** (4) | **15.** (2) | **16.** (4) |
| **17.** (2) | **18.** (3) | **19.** (1) | **20.** (1) |
| **21.** (1) | **22.** (1) | **23.** (2) | **24.** (3) |
| **25.** (4) | **26.** (3) | **27.** (4) | **28.** (2) |
| **29.** (4) | **30.** (1) | **31.** (4) | **32.** (3) |
| **33.** (4) | **34.** (2) | **35.** (3) | **36.** (4) |
| **37.** (3) | **38.** (3) | **39.** (4) | **40.** (3) |
| **41.** (3) | **42.** (2) | **43.** (3) | **44.** (3) |
| **45.** (2) | **46.** (3) | **47.** (3) | **48.** (1) |
| **49.** (3) | **50.** (3) | **51.** (1) | **52.** (3) |
| **53.** (3) | **54.** (2) | **55.** (3) | **56.** (2) |
| **57.** (4) | **58.** (4) | **59.** (3) | **60.** (1) |
| **61.** (1) | **62.** (3) | **63.** (4) | **64.** (3) |
| **65.** (3) | **66.** (1) | **67.** (1) | **68.** (2) |
| **69.** (1) | **70.** (2) | **71.** (2) | **72.** (3) |
| **73.** (2) | **74.** (1) | **75.** (3) | **76.** (2) |
| **77.** (3) | **78.** (2) | **79.** (3) | **80.** (3) |
| **81.** (2) | **82.** (4) | **83.** (3) | **84.** (1) |
| **85.** (2) | **86.** (2) | **87.** (2) | **88.** (3) |
| **89.** (4) | **90.** (3) | **91.** (1) | **92.** (3) |
| **93.** (3) | **94.** (3) | **95.** (2) | **96.** (2) |
| **97.** (2) | **98.** (2) | **99.** (4) | **100.** (2) |

## EXPLANATIONS

**1.** (4) Watt is the unit of power. Similarly, Joule is the unit of work.

**2.** (1) N P B G : O Q C H

N $\xrightarrow{+1}$ O, P $\xrightarrow{+1}$ Q, B $\xrightarrow{+1}$ C, G $\xrightarrow{+1}$ H

Similarly,

A J O T : B K P U

A $\xrightarrow{+1}$ B, J $\xrightarrow{+1}$ K, O $\xrightarrow{+1}$ P, T $\xrightarrow{+1}$ U

**3.** (3) $(101)^2 = 10201$
Similarly
$(107)^2 = 11449$

**4.** (3) Snake belongs to the class reptile while all others belong to the class Mammal.

**5.** (2) $N \xrightarrow{+2} P \xrightarrow{+2} R$

$F \xrightarrow{+2} H \xrightarrow{+2} J$

$K \xrightarrow{+2} M \xrightarrow{+2} O$

But,

$T \xrightarrow{+2} V \xrightarrow{+1} W$

**6.** (1) Except ‘69’ all others are prime numbers.

**7.** (4) Arrangement of words as per dictionary :

(4) Road
↓
(3) Roasted
↓
(5) Roller
↓
(1) Ropped
↓
(2) Roster

**8.** (1) $B \xrightarrow{+6} C \xrightarrow{+6} D \xrightarrow{+6} \boxed{E}$

$C \xrightarrow{+6} D \xrightarrow{+6} E \xrightarrow{+6} \boxed{F}$

$F \xrightarrow{+6} G \xrightarrow{+6} H \xrightarrow{+6} \boxed{I}$

**9.** (4) 2 , 5 , 12 , 27 , $\boxed{58}$

×2 + 1, ×2 + 2, ×2 + 3, ×2 + 4

**10.** (3) J 3 L ⇒ J is daughter of L.
L 9 N ⇒ L is sister of N.
N 3 O ⇒ N is daughter of O.
O 5 K ⇒ O is father of K.
O is father of K, L and N.
Therefore, J is niece of K.

**11.** (2) Suppose the present age of Rakhi = $6x$ years.
According to question,

$(x - 10) \times \frac{5}{3} = x$

$\Rightarrow 5x - 50 = 3x$

$\Rightarrow 5x - 3x = 50$

$\therefore x = \frac{50}{2} = 25$

Present age of Rakhi’s mother $= 2x$
$= 2 \times 25 = 50$ years
Age of Rakhi’s mother at time of her engagement

= (50 – 10) years
= 40 years

**12.** (4) There is only one 'L' in the given word. Therefore, the word FULLNESS cannot be formed.

[S] U S P [E N S E] F U L N E S S ⇒ SENSE

S U S P E N [S E F U L] N E S S ⇒ FUELS

S [U] S P E N [S E F U L] N E S S ⇒ USEFUL

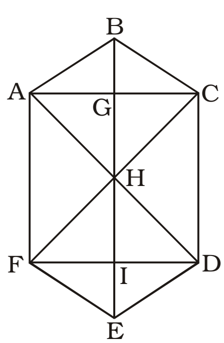
**13.** (1) B A D
↓ ↓ ↓
2 + 1 + 4 = 7
S A P
↓ ↓ ↓
19 + 1 + 16 = 36
⇒ 36 ⇒ 3 + 6 = 9
Therefore,
B A N
↓ ↓ ↓
2 + 1 + 14 = 17
⇒ 17 ⇒ 1 + 7 = 8

**14.** (4) Interchange × and ÷
$9 \times 3 + 8 \div 4 - 7 = 28$
$\Rightarrow 9 \div 3 + 8 \times 4 - 7 = 28$
$\Rightarrow 3 + 32 - 7 = 28$
$\Rightarrow 35 - 7 = 28$

**15.** (2) $4 * 5 \% 3 = (4 \times 5)^3 = 8000$
$2 * 3 \% 2 = (2 \times 3)^2 = 36$
Therefore,
$4 * 3 \% 3 = (4 \times 3)^3 = 1728$

**16.** (4) First Figure
$(2 \times 3 \times 5 \times 1) + 1 = 30 + 1 = 31$
Second Figure
$(4 \times 2 \times 3 \times 6) + 1 = 144 + 1 = 145$
Third Figure
$(2 \times 1 \times 5 \times 7) + 1 = 70 + 1 = 71$

**17.** (2)




The triangles are :
Δ BGA; Δ BGC; Δ BAC; Δ AHB; Δ CBH; Δ HGA; Δ HGC; Δ HCA; Δ HAF; Δ HFD; Δ HDC; Δ HIF; Δ HID; Δ FEH; Δ DHE; Δ EID; Δ EIF; Δ EDF; Δ AFC; Δ AFD; Δ DCA; Δ DCF

Thus, there are 22 triangles in the given figure.

**18.** (3) First Premise is Particular Affirmative (I-type).
Second Premise is Universal Affirmative (A-type).

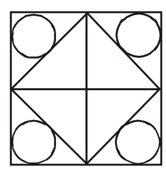
Some pens are pencils.
↙↗
All pencils are erasers.

I + A ⇒ I-type of Conclusion
"Some pens are erasers".
This is the Conclusion I.
Conclusion III is the Converse of the second Premise.

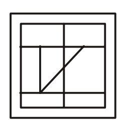
**19.** (1) II, III, IV and V are on the faces adjacent to I. Therefore, VI lies opposite I.

**20.** (1) Pens which are blue can be represented by such numbers that are common to the rectangle and the lower triangle. Such numbers are 4 and 19.
Required sum = 4 + 19 = 23

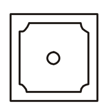
**21.** (1)



**22.** (1)



**23.** (2)



**24.** (3)

**25.** (4) B = 02, 10, 23, 31, 44
L = 03, 14, 20, 32, 41
A = 00, 11, 24, 33, 42
N = 55, 68, 77, 89, 96
D = 59, 66, 78, 85, 97

| Option | B | L | A | N | D |
|---|---|---|---|---|---|
| (1) | 10 | 14 | 00 | 68 | ~~79~~ |
| (2) | 31 | 41 | 33 | 96 | ~~86~~ |
| (3) | 44 | 20 | 42 | ~~88~~ | 59 |
| (4) | 23 | 32 | 24 | 55 | 66 |

**26.** (3) Reverse repo rate is the rate at which the Reserve Bank of India borrows money from commercial banks within the country. It is a monetary policy instrument which can be used to control the money supply in the country.

**27.** (4) When the price of a commodity increases its quantity supplied also increases it is called the extension of supply. In opposite process, when the price of commodity decreases, the quantity supplied of it also decreases it is called the contraction of supply. The supply keeps on fluctuating with changing prices. When there is an extension and contraction of supply then there will be movements along the same supply curve. This is primarily due to the fact that only the price factor causes these movements keeping all the other factors constant.

**28.** (2) The qualifications needed to become a Vice President of India are the following:
- He or she must be a citizen of India.
- He or she must be over 35 years of age.
- He or she must not hold any office of profit.
- He or she must be qualified for election as a Member of the Rajya Sabha or the Council of States.

**29.** (4) Quo-Warranto is a writ issued with a view to restrain a person from holding a public office to which he is not entitled. The writ requires the concerned person to explain to the Court by what authority he holds the office. If a person has usurped a public office, the Court may direct him not to carry out any activities in the office or may announce the office to be vacant.

**30.** (1) Bindusara was the second Mauryan Emperor of India who ruled from (297–273 BC). He was the son of Chandragupta Maurya, the founder of the Mauryan dynasty. Chanakya

remained the chief advisor of Bindusara.

**31.** (4) The Sayyid dynasty was the fourth dynasty of the Delhi Sultanate, with four rulers ruling from 1414 to 1451. Founded by a former governor of Multan, they succeeded the Tughlaq dynasty and ruled the sultanate until they were displaced by the Lodi dynasty.

**32.** (3) Pluto was reclassified from a planet to a dwarf planet in 2006. This is when the IAU formalised the definition of a planet as "A planet is a celestial body that (a) is in orbit around the Sun, (b) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, and (c) has cleared the neighbourhood around its orbit."

**33.** (4) Sandstone is one of the most common types of sedimentary rock and is found in sedimentary basins throughout the world. It is often mined for use as a construction material or as a raw material used in manufacturing. In the subsurface, sandstone often serves as an aquifer for groundwater or as a reservoir for oil and natural gas.

**34.** (2) Herb is a short plant with green, delicate stem without the woody tissues. Generally, they have few branches or branchless. These can be easily uprooted from the soil. They contain enough nutritional benefits and vitamins to make it a part of the diet. Tomato, wheat, grass are few examples of herbs.

**35.** (3) Reptiles are a group of animals that include snakes, lizards, crocodiles, turtles and tuatara. They are cold-blooded, egg laying vertebrates with scales or scutes rather than fur or feathers. The study of reptiles is known as herpetology which also includes the study of amphibians such as frogs and newts.

**36.** (4) A tensiometer in soil science is a measuring instrument used to determine the matric water potential (soil moisture tension) in the vadose zone. This device typically consists of a glass or plastic tube with a porous ceramic cup, and is filled with water.

**37.** (3) The SI unit of force is the newton, symbol N. It is named after Isaac Newton in recognition of his work on classical mechanics, specifically Newton's second law of motion.

**38.** (3) Bad conductors are materials/matter that can conduct heat and electricity partially or in most cases, doesn't conduct heat and electricity at all. Bad (weak conductors) are usually non-metal elements and compounds such as water (H2O), plastic and paper. Glass is not a good conductor of heat and electricity.

**39.** (4) Read-Only Memory, ROM is a storage medium that is used with computers and other electronic devices. As the name indicates, data stored in ROM may only be read. It doesn't lose the information when the power goes off.

**40.** (3) Rusting is an example of a redox reaction. Iron and steel rust when they are in contact with oxygen and water. Rust prevention methods involve coating the metal object with oil, grease, paint, zinc or tin.

**41.** (3) Ions are atoms or molecules which have gained or lost one or more valence electronsgiving the ion a net positive or negative charge. A cation has a net positive charge, and is attracted to the cathode (negative electrode) during electrolysis. Suplhate ion is not cation.

**42.** (2) Smog is made up of many chemicals including nitrogen oxides (NOx), sulphur dioxide (SOx), carbon monoxide (CO), and volatile organic compounds (VOCs), but the two main components of smog are particulate matter (PM) and ground-level ozone (O3).All of these substances are very chemically reactive and are irritating to humans and other living things.

**43.** (3) The National Institution for Transforming India, also called NITI Aayog, was formed via a resolution of the Union Cabinet on January 1, 2015 replacing Planning Commission. NITI Aayog is the premier policy 'Think Tank' of the Government of India, providing both directional and policy inputs. While designing strategic and long term policies and programmes for the Government of India, NITI Aayog also provides relevant technical advice to the Centre and States.

**44.** (3) T.H. Maiman was an American engineer and physicist credited with the building of the first working laser. Maiman's laser led to the subsequent development of many other types of lasers. The laser was successfully fired on May 16, 1960.

**45.** (2) All though many One Day Internationals have been played there, the Saurashtra Cricket Association ground in Rajkot hosted first ever Test match on 9 November, 2016, and became the 23rd test venue in India and 120th in the world.

**46.** (3)

| **Artist** | **Art Form** |
|---|---|
| • Gauri Shankar Devilal | Kathak |
| • Hari Prasad Chaurasia | Flute |
| • M.F. Hussain | Painting |
| • Zakir Hussain | Tabla |

**47.** (3) Virat Kohli was awarded with the Polly Umrigar Award on March 8, 2017. Kohli, who received the award in 2011-12 and 2014-15, becomes the first Indian cricketer to get it on the third occasion. The award is given to the international

cricketer of the year by the Indian cricket board.

**48.** (1) The Sellout is the first book by an American author to win the UK's prestigious Man Booker Prize authored by Paul Beatty.

**49.** (3) USA designated India as the major defence partner in Dec, 2016. The designation as a Major Defense Partner is a status unique to India and institutionalises the progress made to facilitate defence trade and technology-sharing with India to a level at par with that of the United States' closest allies and partners, and ensures enduring cooperation into the future.

**50.** (3) The bilateral exercise between India and Maldives is named 'Ekuverin', which means 'friends' in Maldivian language. The seventh edition of the exercise was held at Kadhdhoo on Lammu Atoll in the Maldives in December 2016. EKUVERIN 2017 was held in India in Belagavi, Karnataka.

**51.** (1) For the number 347 $xy$ to be divisible by 80, this number should divisible by 8 and 10 both. Hence, $y = 0$

To be divisible by 8, 7 $x$ $y$ should be divisible by 8 hence, $x = 2$ as $720 \div 80 = 9$

So, $x + y = 2 + 0 = 2$

**52.** (3) Let the total work be completed in $x$ days.

According to the question,

$$\frac{4}{20} + \frac{x-6}{24} + \frac{x}{30} = 1$$

$$\Rightarrow \frac{x-6}{24} + \frac{x}{30} = 1 - \frac{4}{20}$$

$$= 1 - \frac{1}{5}$$

$$\Rightarrow \frac{5x - 30 + 4x}{120} = \frac{4}{5}$$

$$\Rightarrow 9x - 30 = \frac{4}{5} \times 120 = 96$$

$$\Rightarrow 9x = 96 + 30 = 126$$

$$\Rightarrow x = \frac{126}{9} = 14 \text{ days}$$

**53.** (3) Total surface area of solid sphere = $4\pi R^2$

= $962.5 \text{ cm}^2$

If solid sphere is cut into two equal parts, its total surface area = 2 × (Total surface area of a hemisphere)

= $2 \times 3\pi R^2 = 6\pi R^2$

$\therefore$ Required increase

= $6\pi R^2 - 4\pi R^2 = 2\pi R^2$

$$= 2 \times \frac{22}{7} \times \frac{17.5}{2} \times \frac{17.5}{2}$$

= 11 × 2.5 × 17.5

= 481.25 sq. cm.

**54.** (2) Let the marked price of article be Rs. $x$.

$\Rightarrow (100 - 34)\%$ of $x = 3168$

$\Rightarrow 66\%$ of $x = 3168$

$$\Rightarrow \frac{66x}{100} = 3168$$

$$\Rightarrow x = \frac{316800}{66} = \text{Rs. } 4800$$

**55.** (3) $\frac{3}{7}P = \frac{4}{11}Q$

$$\Rightarrow \frac{P}{Q} = \frac{4}{11} \times \frac{7}{3} = \frac{28}{33}$$

**56.** (2) 9th result = 9 × 57 + 9 × 65 – 17 × 60

= 613 + 585 – 1020

= 1098 – 1020 = 78

**57.** (4) Let C.P. be Rs. 100.

$\therefore$ S.P. = 100 + 170 = Rs. 270

When C.P. is 20% increased,

New C.P. = Rs. 120

New S.P. = Rs. 270

$\therefore$ New profit per cent

$$= \frac{270 - 120}{120} \times 100 = 125\%$$

**58.** (4) Let number be $x$.

According to the question,

32% of $x$ – 17% of $x$ = 120

$$\Rightarrow \frac{32x}{100} - \frac{17x}{100} = 120$$

$$\Rightarrow 15x = 120 \times 100$$

$$\Rightarrow x = \frac{120 \times 100}{15} = 800$$

**59.** (3) Let the speed of boat in still water be = $x$ km/hr.

Speed of stream = $y$ km/hr.

$\therefore$ Rate downstream

= $(x + y)$ kmph

Rate upstream = $(x - y)$ kmph

According to the question,

$$\frac{15}{x-y} + \frac{21}{2(x+y)} = \frac{13}{4} \quad \ldots(i)$$

$$\text{and } \frac{12}{x-y} + \frac{14}{x+y} = 3 \quad \ldots(ii)$$

By equation (i) × 4 – (ii) × 5, we have

$$\frac{60}{x-y} + \frac{42}{x+y} - \frac{60}{x-y} - \frac{70}{x+y} = 13 - 15$$

$$\Rightarrow \frac{28}{x+y} = 2 \Rightarrow x + y = \frac{28}{2}$$

= 14 ... (iii)

From equation (i),

$$\frac{15}{x-y} + \frac{21}{28} = \frac{13}{4}$$

$$\Rightarrow \frac{15}{x-y} + \frac{3}{4} = \frac{13}{4}$$

$$\Rightarrow \frac{15}{x-y} = \frac{13}{4} - \frac{3}{4} = \frac{10}{4} = \frac{5}{2}$$

$$\Rightarrow x - y = \frac{15 \times 2}{5} = 6 \quad \ldots. (iv)$$

$\therefore$ Speed of boat in still water

$$= \frac{1}{2}(x + y + x - y)$$

$$= \frac{1}{2}(14 + 6)$$

= 10 kmph

**60.** (1) Let the amount lent be Rs. P.

According to the question,

$$P - \frac{P \times 5 \times 15}{100} = 250$$

$\Rightarrow$ 100P – 75P = 250 × 100

$\Rightarrow$ 25P = 250 × 100

$\Rightarrow P = \frac{250 \times 100}{25}$ = Rs. 1000

**61.** (1) $x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$

$= \frac{2+\sqrt{3}}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}}$

(Rationalising the denominator)

$= \frac{\left(2+\sqrt{3}\right)^2}{(2)^2 - \left(\sqrt{3}\right)^2}$

$= \frac{4+3+4\sqrt{3}}{4-3} = 7 + 4\sqrt{3}$

$\therefore \frac{1}{x} = \frac{2-\sqrt{3}}{2+\sqrt{3}}$

$= \frac{2-\sqrt{3}}{2+\sqrt{3}} \times \frac{2-\sqrt{3}}{2-\sqrt{3}}$

$= \frac{\left(2-\sqrt{3}\right)^2}{(2)^2 - \left(\sqrt{3}\right)^2}$

$= 4 + 3 - 4\sqrt{3} = 7 - 4\sqrt{3}$

$\therefore x + \frac{1}{x} = 7 + 4\sqrt{3} + 7 - 4\sqrt{3}$

= 14

**62.** (3) $x = 2 + \sqrt{3}$

$\therefore \sqrt{2x} + \frac{1}{\sqrt{2x}}$

$= \frac{2x+1}{\sqrt{2x}} = \frac{2\left(2+\sqrt{3}\right)+1}{\sqrt{2\left(2+\sqrt{3}\right)}}$

$= \frac{5+2\sqrt{3}}{\sqrt{4+2\sqrt{3}}}$

$= \frac{5+2\sqrt{3}}{\sqrt{\left(\sqrt{3}\right)^2 + (1)^2 + 2\left(\sqrt{3}\right)(1)}}$

$= \frac{5+2\sqrt{3}}{\sqrt{\left(\sqrt{3}+1\right)^2}}$

$= \frac{5+2\sqrt{3}}{\sqrt{3}+1} = \frac{\left(5+2\sqrt{3}\right)\left(\sqrt{3}-1\right)}{\left(\sqrt{3}+1\right)\left(\sqrt{3}-1\right)}$

$= \frac{5\sqrt{3} - 5 + 6 - 2\sqrt{3}}{3-1}$

$= \frac{3\sqrt{3}+1}{2}$

**63.** (4) $x + \frac{1}{x} = 4$

On squaring both sides

$\left(x + \frac{1}{x}\right)^2 = 4^2$

$\Rightarrow x^2 + \frac{1}{x^2} + 2 = 16$

$\Rightarrow x^2 + \frac{1}{x^2} = 16 - 2 = 14$

$\left(x^2 + \frac{1}{x^2}\right)^3 = (x^2)^3 + \left(\frac{1}{x^2}\right)^3 +$

$3.x^2.\frac{1}{x^2}\left(x^2 + \frac{1}{x^2}\right)$

$\Rightarrow (14)^3 = x^6 + \frac{1}{x^6} + 3\left(x^2 + \frac{1}{x^2}\right)$

$\Rightarrow 2744 = x^6 + \frac{1}{x^6} + 3\ (14)$

$\Rightarrow x^6 + \frac{1}{x^6} = 2744 - 42 = 2702$

**64.** (3) $\frac{1}{y+1} + \frac{2y+1}{y^2-1}$

$= \frac{y-1+2y+1}{\left(y^2-1\right)} = \frac{3y}{y^2-1}$

$= \frac{3\left(\frac{2-x}{1+x}\right)}{\left(\frac{2-x}{1+x}\right)^2 - 1}$

$= \frac{3\left(\frac{2-x}{1+x}\right)}{\frac{(2-x)^2 - (1+x)^2}{(1+x)^2}}$

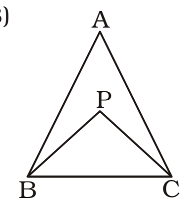
$= \frac{3\left(\frac{2-x}{1+x}\right)}{\frac{4+x^2-4x-1-x^2-2x}{(1+x)^2}}$

$= \frac{3\left(\frac{2-x}{1+x}\right)}{\frac{3-6x}{(1+x)^2}}$

$= \frac{3(2-x)}{1+x} \times \frac{(1+x)^2}{3(1-2x)}$

$= \frac{(2-x)(1+x)}{1-2x}$

**65.** (3)




∠BAC = 50

∠ABC + ∠ACB = 180° – 50°

= 130°

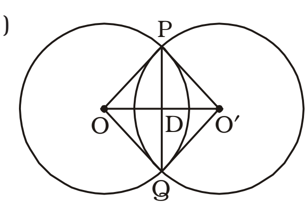
$\frac{1}{2}$ ∠ABC + $\frac{1}{2}$ ∠ACB

= ∠PBC + ∠PCB

$= \frac{130°}{2} = 65°$

∠BPC = 180° – 65° = 115°

**66.** (1)




PQ = 30 cm

OO′ = 40 cm

DO = $\frac{40}{2}$ = 20 cm

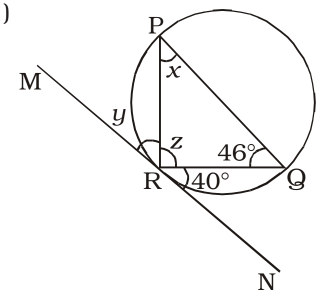
$PD = \frac{30}{2} = 15$ cm

$OP = r = \sqrt{OD^2 + PD^2}$

$= \sqrt{20^2 + 15^2} = \sqrt{400 + 225}$

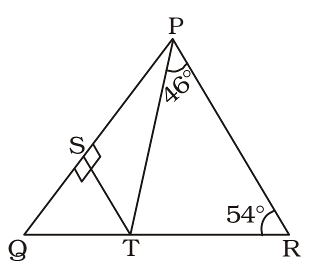
$OP = \sqrt{625} = 25$ cm.

**67.** (1)




$\angle RPQ = \angle QRN = 40° = x$
$\angle PRM = \angle PQR = 46° = y$
$\therefore x + z + 46° = 180°$
$\Rightarrow 40° + z + 46° = 180°$
$\Rightarrow z = 180° - 86° = 94°$

**68.** (2) $\angle PTR = 180° - (46° + 54°)$
$= 80°$
$\angle PTQ = 180° - 80° = 100°$




$\Delta QST \cong \Delta PST$
Let, $\angle STQ = \angle PTS = x$
$x + x = 100° \Rightarrow x = 50°$
Exterior angle = some of other two interior angles
$\angle PQR = 180° - (90° + 50°)$
$= 180° - 140° = 40°$

**69.** (1) $\frac{\cot A + \tan B}{\cot B + \tan A}$

$= \frac{\frac{1}{\tan A} + \tan B}{\frac{1}{\tan B} + \tan A}$

$= \frac{\frac{1 + \tan A \tan B}{\tan A}}{\frac{1 + \tan A \tan B}{\tan B}}$

$= \frac{1 + \tan A \tan B}{\tan A} \times \frac{\tan B}{1 + \tan A \tan B}$

$= \cot A \tan B$

**70.** (2) $\left(\frac{1}{\text{cosec } A + \text{co } A}\right)^2$

$= \left(\frac{1}{\frac{1}{\sin A} + \frac{\cos A}{\sin A}}\right)^2$

$= \frac{\sin^2 A}{(1 + \cos A)^2}$

$= \frac{1 - \cos^2 A}{(1 + \cos A)^2}$

$= \frac{(1 - \cos A)(1 + \cos A)}{1 + \cos A}$

$= \frac{1 - \cos A}{1 + \cos A}$

**71.** (2) $\cos^2\theta - \sin\theta = \frac{1}{4}$

$\Rightarrow 1 - \sin^2\theta - \sin\theta = \frac{1}{4}$

$\Rightarrow 4 - 4\sin^2\theta - 4\sin\theta = 1$
$\Rightarrow 4\sin^2\theta + 4\sin\theta - 3 = 0$
$\Rightarrow 4\sin^2\theta + 6\sin\theta - 2\sin\theta - 3 = 0$
$\Rightarrow 2\sin\theta(2\sin\theta + 3) - 1(2\sin\theta + 3) = 0$
$\Rightarrow (2\sin\theta - 1)(2\sin\theta + 3) = 0$

$\Rightarrow 2\sin\theta - 1 = 0 \Rightarrow \sin\theta = \frac{1}{2}$

or $2\sin\theta + 3 = 0$

$\Rightarrow \sin\theta = \frac{-3}{2}$ (Invalid)

**72.** (3) Percentage increase in number of students of commerce from 2012 to 2016.

$= \frac{168 - 148}{148} \times 100$

$= 13.51\%$

**73.** (2) Percentage increase in number of students of Business from 2012 to 2016.

$\frac{48 - 32}{32} \times 100 = 50\%$

Simple annual growth rate

$= \frac{50}{4} = 12.5\%$

**74.** (1) Required ratio

$= \frac{48 + 56 + 64 + 78 + 92}{105 + 123 + 125 + 148 + 161}$

$= \frac{338}{662} = \frac{169}{331} = 169 : 331$

**75.** (3) In all four subjects
Total students in 2012 = 333
Total students in 2013 = 345
Total students in 2014 = 369
Total students in 2015 = 418
Total students in 2016 = 469
Maximum percentage increase in total no. of students is in year 2015.
Look :
$369 \Rightarrow 418$, Percentage increase $\approx 13.27\%$
$418 \Rightarrow 469$; Percentage increase $\approx 12.2\%$

**76.** (2) Use 'each other' in place of 'one another'.
each other → used when there are two persons or things
one another → used when there are more than two persons/things
**Look at the sentence :**
The two friends are helping each other.
At the fair, most of the people were quarrelling with one another.
So, correct expression ⇒ quarrelling with each other.

**77.** (3) When a superlative degree is used alone, it is followed by— of all the... in the... .
**Look at the sentences :**
Ramesh is the most intelligent of all the boys in the class.
The Rose is the cutest of all the flowers in the world.
But when a superlative degree is not used alone, *i.e.* followed

by a noun, it is written as — the + superlative degree + noun + of... , such as

**Look at the sentence :**

Ramesh is the most intelligent boy of the class.

So, correct expression ⇒ most peaceful of all the countries in the world.

**78.** (2) On both sides, simple present tense will be used.

Climb → present tense, plural verb

Becomes → present tense, singular verb

**79.** (3) It is present perfect continuous and it is formed as follows:

Subject + has been/have been + $V_1$ + ing + for/since...

**For** → period of time (for two days, two months/years, etc.)

**Since** → point of time (since morning/2002/evening/yesterday) etc.

**80.** (3) **Opulent/rich (Adjective)** = luxurious; palatial; lush

**Look at the sentence :**

The opulent comfort of a limousine.

**Fake (Adjective)** = phoney; fraudulent

**Gloomy (Adjective)** = sad; unhappy

**Selfish (Adjective)** = self-centred; introverted; self-absorbed

**81.** (2) **Morose/gloomy (Adjective)** = depressing; dismal; unwelcoming

**Look at the sentence :**

A gloomy corridor badly lit by oil lamps.

**Flatter (Verb)** = compliment; praise; commend

**Friendly (Adjective)** = affectionate; affable

**Savvy (Noun)** = shrewdness; acumen; acuteness

**82.** (4) **Irk/irritate (Verb)** = annoy; vex.

**Look at the sentence :**

It irks her to think of the insult meted out to her.

**Attract (Verb)** = entice; allure; lure

**Discourage (Verb)** = dishearten; demoralize

**Please (Verb)** = cause to feel happy and satisfied

**Look at the sentence :**

I feel pleased to have been invited to the party.

**83.** (3) **Grotesque/odd/queer (Adjective)** = deformed; freakish; strange; peculiar

**Look at the sentence :**

A figure wearing a grotesque mask.

**Free (Adjective)** = independent; self-governing

**Plain (Adjective)** = simple; ordinary

Undecorated good plain food.

**84.** (1) **avoid starvation**

**Look at the sentence :**

I work part-time to pay the mortgage and keep the wolf from the door.

**85.** (2) **problems at the start of** a new project

**Look at the sentence :**

The inevitable teething troubles of a new system should be tackled carefully.

**86.** (2) **nor did I**

To lay emphasis, principle of inversion is used.

The verb is placed before the subject.

**Look at the sentence :**

Only then can we face the situation boldly.

Here comes Mohan.

**87.** (2) a monument worth seeing

worth + $V_1$ + ing → used for saying that something is interesting, useful or helpful.

**Look at the sentence :**

⇒ A lot of small towns is the area are worth visiting.

⇒ The film is worth watching.

**88.** (3) **Impregnable (Adjective)** = that which can't be defeated

**Immolation (Noun)** = offering as a sacrifice; an act of immolating

**Ineligible (Adjective)** = unqualified; disqualified

**89.** (4) **Bursar (Noun)** = a person who manages the financial affairs of a college

**Captor (Noun)** = guard; jailer; custodian

**Phlegmatic (Adjective)** = (of a person) having an unemotional and calm disposition.

**90.** (3) Correct spelling : niece

**91.** (1) Correct spelling : dictionary

**94.** (3) **Even an ant may help an elephant.**

Changing from passive voice to active voice, do the following : object of P.V. (even an ant) + helping verb (may) + main verb (help) + subject of P.V. (an elephant)

**95.** (2) **He begged me not to cry**

It is direct speech of an imperative sentence.

Take care of the following points :

⇒ 'said to' changes to begged/requested

⇒ 'please' is removed

⇒ 'don't' changes to 'not to'

**96.** (2) **Effectiveness (Noun)** = success; efficacy; productiveness

**Efficiency (Noun)** = capability; ability (used in terms of a person or his work)

**97.** (2) **Preceding (Verb)** = coming before

**Succeeding (Verb)** = coming after

**98.** (2) **Fit into something (Phrasal verb)** = to seem to be the right place for something

**99.** (4) **Seldom (Adverb)** = not often; rarely

**Often (Adverb)** = frequently

**Continuously (Adverb)** = without interruption

**100.** (2) **Capacity (Noun)** = the ability/power to do or understand something

**Comfortability (Noun)** = physical comfort

**Reasonability (Noun)** = abilitiy to reason; rationality; related to sound thingking.

**Authority (Noun)** = power; jurisdiction

❑❑❑

SET 2

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 05.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :

Player : Team : : Minister : ?

(1) Army (2) Troupe
(3) Council (4) Crowd

**2.** In the following question, select the related letters from the given alternatives :

TRACK : MECTV : : POND : ?

(1) EOPQ (2) FPQR
(3) GOQQ (4) HPPR

**3.** In the following question, select the related number from the given alternatives :

850 : 863 : : 430 : ?

(1) 437 (2) 442
(3) 435 (4) 451

**4.** In the following question, select the odd word from the given alternatives :

(1) Cotton (2) Mustard
(3) Peas (4) Sesame

**5.** In the following question, select the odd letters from the given alternatives :

(1) CXA (2) MNQ
(3) PKN (4) HSU

**6.** In the following question, select the odd number pair from the given alternatives :

(1) 64 – 576 (2) 17 – 343
(3) 27 – 196 (4) 32 – 36

**7.** Arrange the given words in the sequence in which they occur in the dictionary :

1. Yangtze 2. Yakking
3. Yakuzas 4. Yobbery
5. Yobbish

(1) 24531 (2) 23145
(3) 54231 (4) 54321

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

AK12, GV29, LF18, PO?

(1) 34 (2) 31
(3) 42 (4) 40

**9.** In the following question, select the missing number from the given series.

21, 26, 33, 42, 53, ?

(1) 56 (2) 63
(3) 66 (4) 69

**10.** Ratio of present ages of Pankaj and Punit is 5 : 6 and the sum of their ages is 33 years. What will be difference (in years) of their ages ?

(1) 2 (2) 3
(3) 4 (4) 5

**11.** Kritika walks 40 metres towards south. Then turning to her right she rides 30 metres. Then, turning to her left, she rides 50 metres. Again, she turns to her left and rides 30 metres. How far (in metres) is she from her initial position?

(1) 65 (2) 70
(3) 80 (4) 90

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.

**CONSOLIDATE**

(1) CONSOLE (2) ONSET
(3) SALTY (4) SOLID

**13.** In a certain code language "STUBBORN" is written as "VUTAAOSP". How is "SHIPPING" written in that code language ?

(1) TIJOOHPJ
(2) QFOLLSLO
(3) TIJNNOJH
(4) JITOOHOJ

**14.** Correct the following equation by interchanging the two signs and two numbers.

$7 \times 6 + 5 - 4 = 33$

(1) –, × and 4, 5
(2) ×, + and 4, 5
(3) +, – and 5, 6
(4) ×, – and 5, 6

**15.** If 3 @ 3 ∗ 3 = 3 and 48 @ 4 ∗ 3 = 36 then 91 @ 13 ∗ 2 = ?

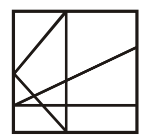
(1) 4 (2) 8
(3) 10 (4) 14

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives :

| 12 | 13 | 156 |
|---|---|---|
| 14 | ? | 154 |
| 15 | 13 | 195 |

(1) 11 (2) 16
(3) 21 (4) 31

**17.** How many triangles are there in the given figure?



(1) 11 (2) 9
(3) 10 (4) 12

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given Conclusions logically follows from the given statements.

**Statements :**

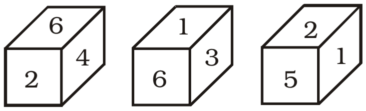
I. No purse is cloth.
II. All purses are leather.

**Conclusions :**

I. No leather is cloth.
II. Some leather are cloth.
III. Some leather are purses.

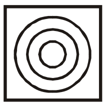
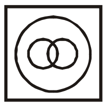
(1) Only Conclusion I follows.
(2) Only Conclusion III follows.
(3) Only Conclusion I and Conclusion II follows.
(4) All Conclusions follow.

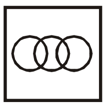
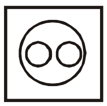
**19.** Three positions of a cube are shown below. What will come opposite to face containing '1' ?




(1) 2 (2) 3
(3) 4 (4) 6

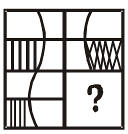
**20.** Identify the diagram that best represents the relationship among the given classes.
Brother, Husband, Men

(1)  (2) 

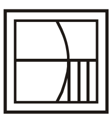
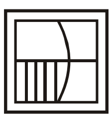
(3)  (4) 

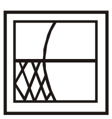
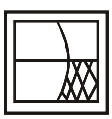
**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**



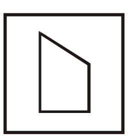

**Answer Figures :**

(1)  (2) 

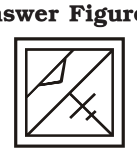
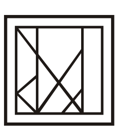
(3)  (4) 

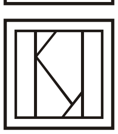
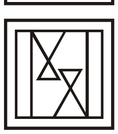
**22.** From the given answer figures select the one in which the question figure is hidden/embedded.

**Question Figure :**



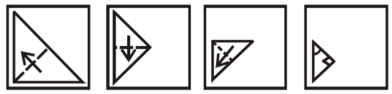
**Answer Figures :**

(1)  (2) 

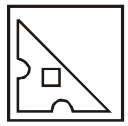
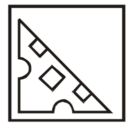
(3)  (4) 

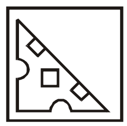
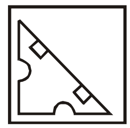
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened ?

**Question Figures :**



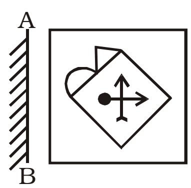
**Answer Figures :**

(1)  (2) 

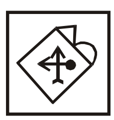
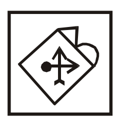
(3)  (4) 

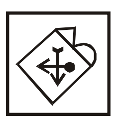
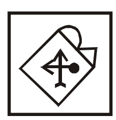
**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure ?

**Question Figure :**




**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of **Martix-I** are numbered from 0 to 4 and that of **Matrix-II** are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'D' can be represented by 68, 95 etc., and 'P' can be represented by 75, 97, etc. Similarly, you have to identify the set of the word "**BAND**".

**Matrix - I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | B | C | K | N | S |
| 1 | K | B | S | C | N |
| 2 | C | S | N | B | K |
| 3 | N | K | B | S | C |
| 4 | S | N | C | K | B |

**Matrix - II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | A | O | T | P | D |
| 6 | T | P | A | D | O |
| 7 | P | D | O | T | A |
| 8 | O | T | D | A | P |
| 9 | D | A | P | O | T |

(1) 23, 76, 22, 77
(2) 11, 67, 40, 95
(3) 00, 55, 03, 59
(4) 44, 89, 30, 87

## GENERAL AWARENESS

**26.** In which of the following case, law of demand fails ?
(1) Giffen goods
(2) Normal goods
(3) Inferior goods
(4) Both Giffen and Inferior goods

**27.** Match the following :

| Form of Market/ | Number of Sellers and Buyers |
|---|---|
| 1. Oligopoly | a. Large number of sellers and buyers |
| 2. Monopoly | b. A few big sellers and a large number of buyers |
| 3. Perfect Competition | c. One seller but large number of buyers |

(1) 1-b, 2- c, 3-a
(2) 1-c, 2-a, 3-b
(3) 1-a, 2-b, 3-c
(4) 1-b, 2-a, 3-c

**28.** How many Fundamental Rights are mentioned in Indian Constitution ?
(1) Five (2) Six
(3) Seven (4) Eight

**29.** Which of the following Article/Articles cannot be suspended even during emergency?
(1) Article 19
(2) Articles 20 and 21
(3) Articles 22 and 23
(4) Articles 24 and 25

**30.** Who was the first Viceroy of India?
(1) Lord Canning
(2) Lord Curzon
(3) Lord Wavell
(4) Lord Mountbatten

**31.** Who wrote 'Nyaya Sutra'?
(1) Vyasa (2) Gautam
(3) Kapila (4) Charaka

**32.** Earth's Deepest point in water is Mariana trench. It is located in which of the following oceans?
(1) Atlantic Ocean
(2) Arctic Ocean
(3) Indian Ocean
(4) Pacific Ocean

**33.** Masai is a tribe of which of the following country?
(1) Kenya (2) Germany
(3) Australia (4) India

**34.** With which of the following body organ is 'pace-maker' associated?
(1) Liver (2) Brain
(3) Heart (4) Lungs

**35.** Haemoglobin is an important component of ______.
(1) white blood cells
(2) red blood cells
(3) plasma
(4) All options are correct

**36.** Anaemia is caused because of deficiency of which of the following?
(1) Cobalt (2) Iron
(3) Sodium (5) Calcium

**37.** What is the minimum distance (in metres) required to hear an echo?
(1) 10 (2) 13
(3) 17 (4) 21

**38.** Why does a black board appears black in colour ?
(1) It reflects black colour
(2) It absorbs black colour
(3) It reflects all colours
(4) It absorbs all the colours

**39.** Which one among the following is a main system board of a computer?
(1) CPU
(2) Keyboard
(3) Microchip
(4) Mother board

**40.** Which among the following metal is used for galvanization?
(1) Zinc (2) Copper
(3) Iron (4) Silver

**41.** What is dry ice?
(1) Solid Carbon dioxide
(2) Solid Nitrogen dioxide
(3) Solid Sulphur dioxide
(4) Solid Water

**42.** Which of the following represents the most complex trophic level?
(1) Community
(2) Population
(3) Ecosystem
(4) Species

**43.** Chief Minister of Andhra Pradesh launched a medical scheme for APL families. What is the name of that scheme?
(1) Haritha Kalyanam
(2) Arogya Raksha
(3) Kalyanamsurvay
(4) Swasthya Raksha

**44.** Who discovered X-rays?
(1) W. C. Roentgen
(2) Albert Einstein
(3) Samuel Cohen
(4) Edward Taylor

**45.** How many players are there in a water polo team?
(1) 6 (2) 5
(3) 7 (4) 8

**46.** 'Lavani' is a dance form of which state in India?
(1) Maharashtra
(2) Gujarat
(3) Madhya Pradesh
(4) Andhra Pradesh

**47.** Who is being awarded with Asian Award 2016 as the Chivas Social entrepreneur of the year?
(1) Vikram Patel
(2) Shri Prakash Lohia
(3) Rami Ranger
(4) Anil Agarwal

**48.** The book "Azad Bachpan ki Aur" is written by which author?
(1) Kailash Satyarthi
(2) Radhakant Bharti
(3) Dipak Misra
(4) Subhash Chandra

**49.** 'India by the Nile', was a cultural festival celebrated by India and _____.
(1) Sudan (2) Kampala
(3) Egypt (4) Kenya

**50.** Sheikh Hasina Wazed is the Prime Minister of which neighbouring country of India?
(1) Pakistan
(2) Bangladesh
(3) Afghanistan
(4) Nepal

## QUANTITATIVE APTITUDE

**51.** What is the value of $\left[\frac{12}{(\sqrt{5}+\sqrt{3})}+\frac{18}{(\sqrt{5}-\sqrt{3})}\right]$ ?
(1) $15(\sqrt{5}-\sqrt{3})$
(2) $3(5\sqrt{5}+\sqrt{3})$
(3) $15(\sqrt{5}+\sqrt{3})$
(4) $3(3\sqrt{5}+\sqrt{3})$

**52.** S, T and U can complete a work in 40, 48 and 60 days respectively. They received Rs. 10800 to complete the work. They begin the work together but T left 2 days before the completion of the work and U left 5 days before the completion of the work. S has completed the remaining work alone. What is the share of S (in Rs.) from total money ?
(1) 4000 (2) 4320
(3) 4500 (4) 4860

**53.** A farmer's land is in the shape of a trapezium which has its parallel sides measuring 2.56 yards and 3.44 yeards and the distance between the parallel sides in 1.44 yards. The cost of ploughing the land is Rs. 1800 per square yard. What amount will (in Rs.) have to be spent in order to plough the entire land ?
(1) 3672 (2) 6732
(3) 7776 (4) 8214

**54.** If after giving a discount of 18%, a book is sold for Rs. 1599, what will be the marked price (in Rs.) of the book ?

(1) 1800 (2) 1880
(3) 1950 (4) 2000

**55.** A man has 3 sons, 2 daughters and a wife. They divided a sum of Rs. 19000 among themselves such that each daughter got 1.5 times the amount received by each son and his wife received Rs. 600 less than each son. What is the total amount (in Rs.) received by the three sons together ?
(1) 2800 (2) 3600
(3) 5600 (4) 8400

**56.** The average of three consecutive even numbers is A. If next five even numbers are added, what is the average of these eight numbers ?
(1) A + 3 (2) A + 4
(3) A + 5 (4) A + 7

**57.** While selling an article for Rs. 18450, a person suffered a loss of 50%. At what price he sould have sold the article (in Rs.) to earn a profit of 50% ?
(1) 13837 (2) 52000
(3) 55350 (4) 56775

**58.** The present population of a town is 26010. It increases annually at the rate of 2%. What was the population of town two years ago ?
(1) 25000 (2) 25100
(3) 25200 (4) 25500

**59.** A train of length 100 metre crosses another train of length 150 metre, running on a parallel track in the opposite direction in 9 seconds. If the speed of train having length 150 metre is 40 km/hr, then what is the speed (in km/hr) of the other train ?
(1) 30 (2) 48
(3) 50 (4) 60

**60.** What is the compound interest (in Rs.) for 1 year on a sum of Rs. 20000 at the rate of 40% per annum compounded half yearly ?
(1) 8000 (2) 8650
(3) 8750 (4) 8800

**61.** What is the difference of the cube and square of the common root of $(x^2 - 8x + 15) = 0$ and $(y^2 + 2y - 35) = 0$ ?
(1) 76 (2) 100
(3) 294 (4) 318

**62.** If $\left(x - \frac{1}{3}\right)^2 + (y - 4)^2 = 0$, then what is the value of $\frac{y + x}{y - x}$ ?
(1) $\frac{11}{13}$ (2) $\frac{13}{11}$
(3) $\frac{16}{9}$ (4) $\frac{9}{16}$

**63.** What is the difference of the factors of the expression $x^2 + \frac{1}{x^2} - 6$ ?
(1) 0 (2) 1
(3) 2 (4) 4

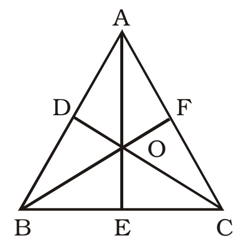
**64.** If $x + \left(\frac{1}{x}\right) = \sqrt{13}$, then what is the value of $x^5 - \left(\frac{1}{x^5}\right)$ ?
(1) 169 (2) $169\sqrt{3}$
(3) 393 (4) 507

**65.** If D and E are points on the sides AB and AC respectively of a triangle ABC such that DE || BC. If AD = $x$ cm, DB = $(x - 3)$ cm, AE = $(x + 3)$ cm and EC = $(x - 2)$ cm, what is the value (in cm.) of $x$ ?
(1) 3 (2) 3.5
(3) 4 (4) 4.5

**66.** If medians of a triangle have lengths 18 cm, 24 cm and 30 cm, what is the area (in cm$^2$) of the triangle ?
(1) $24\sqrt{6}$ (2) 244
(3) 288 (4) 360

**67.** Two smaller circles touch a large circle internally and pass through the centre O of the larger circle. If the diameter of the bigger circle is 28 cm, what is the area of the bigger circle which is not enclosed by the two smaller circles (in cm$^2$) ?
(1) 154 (2) 256
(3) 308 (4) 616

**68.** In the given figure, O is the in-centre of triangle ABC. If $\frac{AO}{OE} = \frac{5}{4}$ and $\frac{CO}{OD} = \frac{3}{2}$, what is the value of $\frac{BO}{OF}$ ?




(1) $\frac{19}{14}$ (2) $\frac{38}{17}$
(3) $\frac{38}{7}$ (4) $\frac{19}{7}$

**69.** What is the simplified value of $\tan\left(\frac{\theta}{2}\right) + \cot\left(\frac{\theta}{2}\right)$ ?
(1) 2 cosec θ (2) 2 sec θ
(3) sin θ (4) cosec θ

**70.** What is the simplified value of $\left[\frac{(\sec^3 x - \tan^3 x)}{(\sec x - \tan x)}\right] - 2\tan^2 x - \sec x \tan x$ ?
(1) 0 (2) 2
(3) – 1 (4) 1

**71.** If $\sin^8\theta + \cos^8\theta - 1 = 0$, what is the value of $\cos^2\theta \sin^2\theta$ (If $\theta \neq 0$ or $\frac{\pi}{2}$) ?
(1) – 1 (2) 0
(3) 1 (4) 2

**Directions (72–75) :** The table given below represents the marks obtained by 5 students in 4 different subjects. Each student was given marks out of 100 in each of the given subjects.

| Student | English | Mathematics | Science | Hindi |
|---|---|---|---|---|
| 1 | 87 | 96 | 90 | 81 |
| 2 | 74 | 99 | 94 | 89 |
| 3 | 89 | 99 | 99 | 92 |
| 4 | 62 | 89 | 96 | 91 |
| 5 | 95 | 92 | 92 | 86 |

**72.** In which subject the total marks of all the students is highest ?
(1) English
(2) Mathematics
(3) Science
(4) Hindi

**73.** Which student scored the maximum marks in all the 4 subjects taken together ?
(1) Student 1
(2) Student 2
(3) Student 3
(4) Student 5

**74.** A new subject is added in which all the students have scored 100 marks. If total marks are calculated as sum of the marks of highest 4 subjects, then who will be second in terms of total marks ?
(1) Student 3
(2) Student 2
(3) Student 5
(4) Student 4

**75.** The average marks per student in English is what per cent of the average marks per student in Hindi ?
(1) 91.48 (2) 97.12
(3) 92.71 (4) 98.18



## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of a sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** My sister-in-laws (1)/ who live in Kolkata (2)/ have come to stay with us. (3)/ No Error (4)

**77.** These kind of clothes (1)/ are rather expensive (2)/ for me to buy. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blanks is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** The employee did not _____ to the argument of the manager.
(1) precede (2) exceed
(3) concede (4) recede

**79.** He was sworn _____ as the Prime Minister of our country.
(1) in (2) off
(3) about (4) out

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Cantankerous**
(1) Humorous
(2) Quarrelsome
(3) Remorseful
(4) Dullness

**81. Connoisseur**
(1) Decisive
(2) Uncivilised
(3) Discerning Judge
(4) Narrow-minded

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Nugatory**
(1) Delusive (2) Futile
(3) Unreal (4) Productive

**83. Naive**
(1) Artful
(2) Candid
(3) Credulous
(4) Sincere

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

**84. Mealy-mouthed**
(1) Ill-tempered
(2) Soft-spoken
(3) Enthusiastic
(4) Depressed

**85. By fits and starts**
(1) Occasionally
(2) Totally
(3) Finally
(4) Irregularly

**Directions (86–87) :** Improve the bracketed part of each sentence.

**87.** I had (**not only helped her by**) giving hints but also with providing him links.
(1) helped not only to her by
(2) helped her not only by
(3) not only helped her
(4) No improvement

**87.** We (**has finished**) our lunch half an hour ago.
(1) finished
(2) will have finished
(3) had finished
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88.** The act of speaking irreverently about sacred things.
(1) Atheist (2) Blasphemy
(3) Bellicose (4) Defection

**89.** A person who talks too much of himself.
(1) Egoist (2) Elite
(3) Emetic (4) Egotist

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Entrepreneur
(2) Remuneration
(3) Apprentice
(4) Soveriegnity

**91.** (1) Tranquillity
(2) Perseverence
(3) Resplendence
(4) Accommodation

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P : In other countries which are populated by 'haves', frustration is among them also because they do "haves".
Q: In some countries, frustration exists because these countries are populated by "have-nots".
R: Frustration is a global cancer.
S: It has spared no country.
(1) RSQP (2) SQRP
(3) PSRQ (4) QRPS

**93.** P: The real purpose underlying this maxim lies in its utility in the worldly sense.
Q: He has within him a spirit which is ever exhorting him to cut down his needs and learn to be happy with what he has.
R: Man is something much greater than an intelligent being using his intellect to make newer inventions from time to time.
S: It tells us to be up and doing, not to be passive in our attitude to life.
(1) PRQS (2) QPSR
(3) RQPS (4) SRPQ

**Directions :** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**94.** Why do you waste money?
(1) Why is money been wasted by you?
(2) Why has money been wasted by you ?
(3) Why is money wasted by you?
(4) Why is money being wasted by you?

**Directions :** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**95. The doctor said, "well, what can I do for you?"**
(1) The do ctor wanted to know what he could do for her.
(2) The doctor said that he couldn't do anything for her.
(3) The doctor asked what he couldn't do for her.
(4) The doctor wondered what he could do for her.

**Directions (96–100)** : In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank numbered out of the four alternatives.

The world has seen a **(96)** growth in several spheres.

Agricultural production, industrial production, communication, medicine, education etc. have seen **(97)** growth. We can safely assume that the future is not as **(98)** as once appeared to be. We are not by a vision of hungry hordes overwhelming world food resources. Although it is **(99)** that many people, especially in the developing countries, are hungry, illiterate and **(100)** to diseases.

**96.** (1) tremendous
(2) mere
(3) hardly
(4) slow

**97.** (1) equal
(2) unprecedented
(3) negligible
(4) negetive

**98.** (1) good (2) strong
(3) bleak (4) high

**99.** (1) unclear (2) false
(3) incorrect (4) true

**100.** (1) prone (2) averse
(3) liable (4) engross

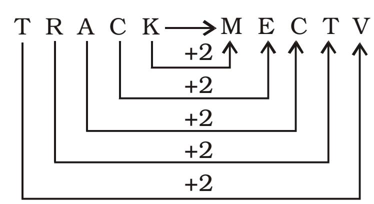
## ANSWERS

| 1. (3) | 2. (2) | 3. (1) | 4. (1) |
|---|---|---|---|
| 5. (4) | 6. (2) | 7. (2) | 8. (2) |
| 9. (3) | 10. (2) | 11. (4) | 12. (3) |
| 13. (4) | 14. (3) | 15. (4) | 16. (1) |
| 17. (3) | 18. (*) | 19. (3) | 20. (2) |
| 21. (4) | 22. (2) | 23. (2) | 24. (1) |
| 25. (3) | 26. (1) | 27. (1) | 28. (2) |
| 29. (2) | 30. (1) | 31. (2) | 32. (4) |
| 33. (1) | 34. (3) | 35. (2) | 36. (2) |
| 37. (3) | 38. (4) | 39. (4) | 40. (1) |
| 41. (1) | 42. (3) | 43. (2) | 44. (1) |
| 45. (3) | 46. (1) | 47. (4) | 48. (1) |
| 49. (3) | 50. (2) | 51. (2) | 52. (4) |
| 53. (3) | 54. (3) | 55. (4) | 56. (3) |
| 57. (3) | 58. (1) | 59. (4) | 60. (4) |
| 61. (2) | 62. (2) | 63. (4) | 64. (3) |
| 65. (4) | 66. (3) | 67. (3) | 68. (3) |
| 69. (1) | 70. (4) | 71. (4) | 72. (2) |
| 73. (3) | 74. (2) | 75. (3) | 76. (1) |
| 77. (1) | 78. (3) | 79. (1) | 80. (2) |
| 81. (3) | 82. (4) | 83. (1) | 84. (2) |
| 85. (4) | 86. (2) | 87. (1) | 88. (2) |
| 89. (4) | 90. (4) | 91. (2) | 92. (1) |
| 93. (3) | 94. (3) | 95. (1) | 96. (1) |
| 97. (2) | 98. (3) | 99. (4) | 100. (1) |

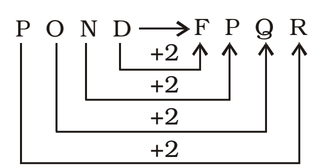
## EXPLANATIONS

**1.** (3) Second is the group of the first. A group of players is called a team. Similarly, a group of Ministers is called Council (of Ministers).

**2.** (2)




Similarly,




**3.** (1) 850 + (8 + 5 + 0)
= 850 + 13 = 863
Similarly,
430 + (4 + 3 + 0)
= 430 + 7 = 437

**4.** (1) Mustard and Sesame are oilseeds. Peas are Legumes. Cotton is a soft, fluffy staple fiber that grows in a protective case.

**5.** (4) C ⟷ X

Pair of opposite letters.

$X \xrightarrow{+3} A$

$M \longleftrightarrow N$ ; $N \xrightarrow{+3} Q$

$P \longleftrightarrow K$ ; $K \xrightarrow{+3} N$

But,

$H \longleftrightarrow S$ ; $S \xrightarrow{+2} U$

**6.** (2) 64 ⇒ 6 × 4 = 24
⇒ 24 × 24 = 576
27 ⇒ 2 × 7 = 14
⇒ 14 × 14 = 196
32 ⇒ 3 × 2 = 6
⇒ 6 × 6 = 36
But,
17 ⇒ 1 × 7 = 7
⇒ 7 × 7 × 7 = 343

**7.** (2) Arrangement of words as per order in the dictionary :

2. Yakking
↓
3. Yakuzas
↓
1. Yangtze
↓
4. Yobbery
↓
5. Yobbish

**8.** (2) A K
↓ ↓
1 + 11 = 12
G V
↓ ↓
7 + 22 = 29
L F
↓ ↓
12 + 6 = 18
P O
↓ ↓
16 + 15 = **31**

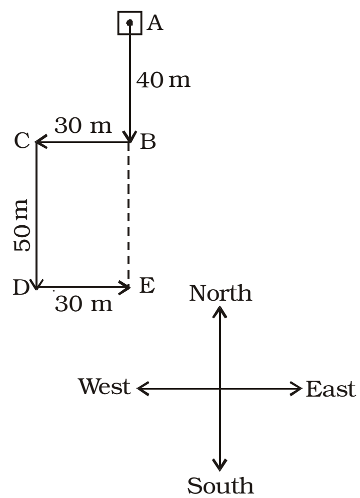
**9.** (3) 21 + 5 = 26
26 + 7 = 33
33 + 9 = 42
42 + 11 = 53
53 + 13 = **66**

**10.** (2) $5x + 6x = 33$
$\Rightarrow 11x = 33$

$\therefore x = \frac{33}{11} = 3$

Age of Pankaj
$= 5x = 5 \times 3 = 15$ years
Age of Punit
$= 6x = 6 \times 3 = 18$ years
Required difference
= (18 – 15) years
= 3 years

**11.** (4)




AE = AB + BE
= (40 + 50) metre
= 90 metre

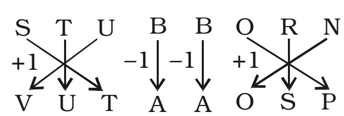
**12.** (3) There is no 'Y' letter in the given word. Therefore, the word SALTY cannot be formed.

[C O N S O L] I D A T [E] ⇒ CONSOLE

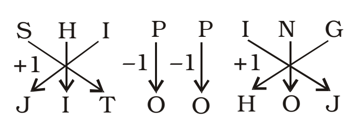
C [O N S] O L I D A [T E] ⇒ ONSET

C O N [S O L I D] A T E ⇒ SOLID

**13.** (4)




Therefore,




**14.** (3) 7 × 6 + 5 – 4 = 33
⇒ 7 × 5 – 6 + 4 = 33
⇒ 35 – 6 + 4 = 33
⇒ 39 – 6 = 33

**15.** (4) 3 @ 3 * 3 = 3

$\Rightarrow \frac{3}{3} \times 3 = 3$

48 @ 4 * 3 = 36

$\Rightarrow \frac{48}{4} \times 3 = 36$

Therefore,
91 @ 13 * 2

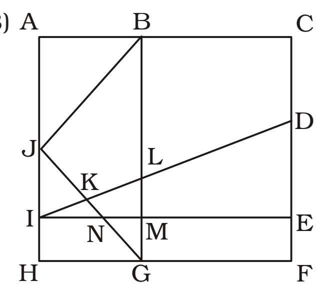
$\Rightarrow \frac{91}{13} \times 2 = \boxed{14}$

**16.** (1) First Row
12 × 13 = 156
Second Row
14 × ? = 154

$\Rightarrow ? = \frac{154}{14} = \boxed{11}$

Third Row
15 × 13 = 195

**17.** (3)




The triangles are
Δ BAJ ; Δ GHJ ; Δ JGB ;
Δ JIK ; Δ IKN; Δ GMN ;
Δ LMI ; Δ GLK ; Δ JIN ;
Δ DEI
Thus, there are 10 triangles in the given figure.

**18.** (*) First Premise is Universal Negative (E–Type).

Second Premise is Universal Affirmative (A–type).

No cloth is purse.

All purses are leather.

E + A ⇒ $O_1$–type of Conclusion.

"Some leather are not cloth".

Conclusion I and Conclusion II form Complementary Pair. Therefore, either Conclusion I or Conclusion II follows.

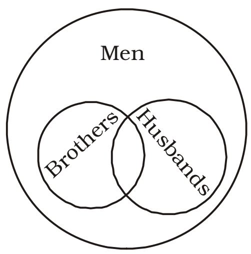
Conclusion III is the Converse of the second Premise.

**19.** (3) The numbers 2, 3, 5 and 6 lie on the faces adjacent to number 1. Therfore, 4 lies opposite 1.

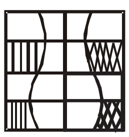
**20.** (2) All brothers are men.

All husbands are men.

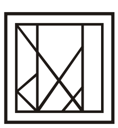
Some brothers may be husbands and vice-versa.



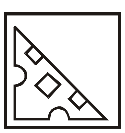

**21.** (4)



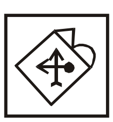
**22.** (2)



**23.** (2)



**24.** (1)



**25.** (3) B ⇒ 00, 11, 23, 32, 44
A ⇒ 55, 67, 79, 88, 96
N ⇒ 03, 14, 22, 30, 41
D ⇒ 59, 68, 76, 87, 95

| Option | B | A | N | D |
|---|---|---|---|---|
| (1) | 23 | 76 | 22 | 77 |
| (2) | 11 | 67 | 40 | 95 |
| (3) | 00 | 55 | 03 | 59 |
| (4) | 44 | 89 | 30 | 87 |

**26.** (1) In economics, a Giffen good is one which people consume more of as price rises. A Giffen good is a highly inferior good that has an upward-sloping demand curve, which is contrary to the fundamental law of demand which states that quantity demanded for a product falls as the price increases, resulting in a downward slope for the demand curve.In normal cases, as the price of the good rises, the substitution effect makes consumers purchase less of it.

| Price change | Type of good | Substitution and income effect | Change in demand |
|---|---|---|---|
| Fall | Normal | Substitution and income effect both act in the same direction | Rise |
| Fall | Inferior | substitution effect increasing demand is greater than the income effect reducing demand | Rise |
| Fall | Giffen | Income effect reducting demand is greater than the substitution effect increasing demand | Fall |
| Rise | Normal | Substitution and income effect both act in the same direction | Fall |
| Rise | Inferior | Substitution effect reducing demand is greater than the income effect increasing demand | Fall |
| Rise | Giffen | Income effect increasing demand is greater than the substitution effect reducing demand | Rise |

**27.** (1) Oligopoly: form of market in which there are few large firms selling to a large number of buyers; Monopoly: form of market in which there is a single seller of a commodity and large number of buyers; Perfect competition: very large number of buyers and sellers of a homogeneous product.

**28.** (2) There are 6 fundamental rights under Part III of Indian constitution. They are as follows: Right to equality; Right to freedom; Right against exploitation; Right to freedom of religion; Cultural and Educational right; Right to constitutional remedies

**29.** (2) Article 359 empowers the President to suspend the enforcement of all fundamental rights (except those guaranteed by article 20 and article 21) for period as specified by president during national emergency on ground on war, external aggression and armed rebellion. The restriction on article 359 over article 20 and 21 is on account of 44th amendment act 1978.

**30.** (1) Lord Canning, the Governor-General of India during the Indian Rebellion of 1857, was made the first Viceroy of India under the Government of India Act 1858. He was rewarded for suppressing the revolt. He served in India either as Governor General or Viceroy from 1856 to 1862.

**31.** (2) The Nyaya Sutras is an ancient Indian Sanskrit text composed by Ak?apada Gautama. Composed between 6th-century BC and 2nd-century BC, it is the foundational text of the Nyaya school of Hindu philosophy. It deals with rules of reason, logic, epistemology and metaphysics.

**32.** (4) The Mariana trenchis located in the western Pacific Ocean, to the east of the Mariana Islands, in the Western Pacific East of Philippines.It reaches a maximum-known depth of 10,994 metres at a small slot-shaped valley in its floor known as the Challenger Deep.

**33.** (1) The Maasai are a Nilotic ethnic group inhabiting southern Kenya and northern Tanzania. They are among the best known local populations due to their residence near the many game parks of the African Great Lakes, and their distinctive customs and dress. The Maasai speak the Maa language.

**34.** (3) A pacemaker is a small device that's placed in the chest or abdomen to help control abnormal heart rhythms. This device uses low-energy electrical pulses to prompt the heart to beat at a normal rate. Pacemakers are used to treat arrhythmias.

**35.** (2) Hemoglobin is the iron-containing oxygen-transport metalloprotein in the red blood cells that carries oxygen from the lungs to the body's tissues and returns carbon dioxide from the tissues back to the lungs. In mammals, the protein makes up about 96% of the red blood cells' dry content (by weight), and around 35% of the total content (including water).

**36.** (2) Anemia is a condition that develops when blood lacks enough healthy red blood cells or hemoglobin. The three main types of anemia are due to blood loss, decreased red blood cell production, and increased red blood cell breakdown. Causes of decreased production include iron deficiency, a lack of vitamin B12, thalassemia, and a number of neoplasms of the bone marrow.

**37.** (3) The human ear cannot distinguish echo from the original direct sound if the delay is less than 1/15 of a second. The velocity of sound in dry air is approximately 343 m/s at a temperature of 25 °C. Therefore, the reflecting object must be more than 17.2m from the sound source for echo to be perceived by a person located at the source.

**38.** (4) When white light falls on an opaque body, it absorbs all the colours except onecolour which it reflects; this reflected colour is the colour of the body. The blackboard appears black because it absorbs all the colours. The white paper appears white because it reflects all the colours and absorbs no colour.

**39.** (4) A motherboard (sometimes alternatively known as the mainboard, system board, baseboard, planar board or logic board) is the main printed circuit board (PCB) found in general purpose microcomputers and other expandable systems. It holds and allows communication between many of the crucial electronic components of a system, such as the central processing unit (CPU) and memory, and provides connectors for other peripherals.

**40.** (1) Galvanization is the process of applying a protective zinc coating to steel or iron, to prevent rusting. The most common method is hot-dip galvanizing, in which parts are submerged in a bath of molten zinc.

**41.** (1) Dry ice, sometimes referred to as "cardice," is the solid form of carbon dioxide. Its advantages include lower temperature than that of water ice and not leaving any residue (other than incidental frost from moisture in the atmosphere).It is used primarily as a cooling agent in preserving frozen foods.

**42.** (3) In ecology, the trophic level is the position that an organism occupies in a food chain - what it eats, and what eats it.Ecosystem represents the most complex trophic level. Each species in an ecosystem is affected by the other species in that ecosystem. There are very few single prey-single predator relationships. Most prey are consumed by more than one predator, and most predators have more than one prey. It is also marked by multitrophic interactions that involve more than two trophic levels in a food web.

**43.** (2) Andhra Pradesh Chief Minister N Chandrababu Naidu, in January 2017, launched NTR Arogya Raksha Scheme to provide the medical treatment to the people below Above Poverty Line (APL) at Rs. 1200 premium per annum. The Scheme covers 1044 diseases and offers up to Rs. 2 lakh and free treatment.

**44.** (1) X-rays were discovered by Wilhelm Conrad Roentgen, a Professor at Wuerzburg University in Germany, on 8 November 1895. He made the discovery while working with a cathode-ray tube in his laboratory. Roentgen observed a fluorescent glow of crystals on a table near his tube that was capable of passingthrough most substances.

**45.** (3) Water polo is a competitive team sport played in the water between two teams. Each team made up of six field players and one goalkeeper. Except for the goalkeeper, players participate in both offensive and defensive roles.

**46.** (1) Lavani is a folk dance of Maharashtra. It is a combination of traditional song and dance, which is particularly performed to the enchanting beats of 'Dholak', a drum like instrument. The dance is performed by attractive women wearing nine-yard sarees.

**47.** (4) Anil Agarwal, the founder and Chairman of Vedanta Resources, was on 8 April 2016 honoured as the Entrepreneur of the Year in the 6th Asian awards. The Asian Awards were first awarded in 2010. It recognises and rewards exemplary achievement across 14 categories that include business, philanthropy, entertainment, culture and sport.

**48.** (1) Azad Bachpan ki Aur has been authored by Indian Nobel laureate Kailash Satyarthi. Launched by Supreme Court justice Dipak Misra in January 2016, the book is a selectionof articles penned by Satyarthi on landmark movements, judgements, and prominent policy intervention in his struggle for child rights.

**49.** (3) The fifth edition of the mega cultural festival 'India by the Nile' was held in Cairo, Egypt, in March 2017. The festival aimed to showcase the diversity in India's culture, art and cuisine and also to strengthen India's partnership with Egypt. The Embassy of India in Cairo, in collaboration with Teamwork Arts, presented 'Crafts Mela' as part of the festival.

**50.** (2) Sheikh Hasina Wazed is the current Prime Minister of Bangladesh, in office since January 2009.She previously served as opposition leader from 1986 to 1990 and from 1991 to 1995, as Prime Minister from 1996 to 2001, and has been leading the Bangladesh Awami League since 1981.

**51.** (2) Expression

$= \frac{12}{\sqrt{5}+\sqrt{3}} + \frac{18}{\sqrt{5}-\sqrt{3}}$

$= \frac{12(\sqrt{5}-\sqrt{3})}{(\sqrt{5}+\sqrt{3})(\sqrt{5}-\sqrt{3})} + \frac{18(\sqrt{5}+\sqrt{3})}{(\sqrt{5}+\sqrt{3})(\sqrt{5}-\sqrt{3})}$

$= \frac{12(\sqrt{5}-\sqrt{3})}{5-3} + \frac{18(\sqrt{5}+\sqrt{3})}{5-3}$

$= \frac{12(\sqrt{5}-\sqrt{3})}{2} + \frac{18(\sqrt{5}+\sqrt{3})}{2}$

$= 6(\sqrt{5}-\sqrt{3}) + 9(\sqrt{5}+\sqrt{3})$

$= 6\sqrt{5}-6\sqrt{3} + 9\sqrt{5}+9\sqrt{3}$

$= 15\sqrt{5}+3\sqrt{3} = 3(5\sqrt{5}+\sqrt{3})$

**52.** (4) Let S work for $x$ days.

$\therefore$ T worked for $(x-2)$ days.

U worked for $(x-5)$ days.

According to the question,

$\frac{x}{40} + \frac{x-2}{48} + \frac{x-5}{60} = 1$

$\Rightarrow \frac{6x+5x-10+4x-20}{240} = 1$

$\Rightarrow 15x-30 = 240$

$\Rightarrow 15x = 240 + 30 = 270$

$\Rightarrow x = \frac{270}{15} = 18$ days

$\therefore$ S's share

= Rs. $\left(\frac{10800}{40}\times 18\right)$

= Rs. 4860

**53.** (3) Area of land in the shape of trapezium

$= \frac{1}{2}$ (sum of parallel sides) × perpendicular distance

$= \frac{1}{2}(2.56 + 3.44) \times 1.44$ sq. yards

$= \frac{1}{2} \times 6 \times 1.44$ sq. yards

= 4.32 sq. yards

$\therefore$ Expenditure on ploughing

= Rs. (4.32 × 1800)

= Rs. 7776

**54.** (3) Let the marked price of book be Rs. $x$.

According to the question,

$x \times (100 - 18)\% = 1599$

$\Rightarrow \frac{x\times 82}{100} = 1599$

$\Rightarrow x = \frac{1599\times 100}{82}$ = Rs. 1950

**55.** (4) Let each son's share be Rs. $x$.

Each daughter's share

= Rs. $1.5x$

Wife's share = Rs. $(x - 600)$

According to the question,

$3x + 2 \times 1.5x + x - 600 = 19000$

$\Rightarrow 3x + 3x + x = 19000 + 600 = 19600$

$\Rightarrow 7x = 19600$

$\Rightarrow x = \frac{19600}{7}$ = Rs. 2800

$\therefore$ Total share of three sons

= Rs. (3 × 2800)

= Rs. 8400

**56.** (3) New average will increase by 5.

i.e. New average = A + 5

Illustration :

$\frac{2+4+6}{3} = \frac{12}{3} = 4$ ;

$\frac{2+4+6+8}{4} = \frac{20}{4} = 5$ ;

$\frac{2+4+6+8+10}{5} = \frac{30}{5} = 6.$

**57.** (3) C.P. of article

= Rs. $\left(\frac{100}{50}\times 18450\right)$

= Rs. 36900

To gain 50%,

S.P. of article

= Rs. $\left(\frac{36900\times 150}{100}\right)$

= Rs. 55350

**58.** (1) The population of city 2 years ago

$= \frac{P}{\left(1+\frac{R}{100}\right)^2}$

$= \frac{26010}{\left(1+\frac{2}{100}\right)^2} = \frac{26010}{\left(1+\frac{1}{50}\right)^2}$

$= \frac{26010}{\left(\frac{51}{50}\right)^2} = \frac{26010\times 50\times 50}{51\times 51}$

= 25000

**59.** (4) Speed of first train 150 metre long = 40 kmph

Speed of second train

= $x$ kmph

Total length of both trains

= (100 + 150) metre

= 250 metre = $\frac{1}{4}$ km.

According to the question,

$= \frac{\text{Total length of trains}}{\text{Relative speed}} = \text{Time}$

$\Rightarrow \dfrac{\frac{1}{4}}{x+40} = \dfrac{9}{3600} = \dfrac{1}{400}$

$\Rightarrow 4(x+40) = 400$

$\Rightarrow x + 40 = 100$

$\Rightarrow x = 100 - 40 = 60$ kmph.

**60.** (4) Rate of interest = 20% per half year

Equivalent rate for 1 year

$= \left(20 + 20 + \dfrac{20 \times 20}{100}\right)\%$

$= 44\%$

$\therefore$ C.I. $= \dfrac{20000 \times 44}{100}$

= Rs. 8800

**61.** (2) $x^2 - 8x + 15 = 0$

$\Rightarrow x^2 - 5x - 3x + 15 = 0$

$\Rightarrow x(x-5) - 3(x-5) = 0$

$\Rightarrow (x-3)(x-5) = 0$

$\Rightarrow x = 3$ or $5$

Again,

$y^2 + 2y - 35 = 0$

$\Rightarrow y^2 + 7y - 5y - 35 = 0$

$\Rightarrow y(y+7) - 5(y+7) = 0$

$\Rightarrow (y-5)(y+7) = 0$

$\Rightarrow y = 5$ or $-7$

$\therefore$ Required difference $= 5^3 - 5^2$

$= 125 - 25 = 100$

**62.** (2) If $a^2 + b^2 = 0$,

$\Rightarrow a = 0;\ b = 0$

$\therefore \left(x - \dfrac{1}{3}\right)^2 + (y-4)^2 = 0$

$\Rightarrow x - \dfrac{1}{3} = 0$

$\Rightarrow x = \dfrac{1}{3}$

and $y - 4 = 0$

$\Rightarrow y = 4$

$\therefore \dfrac{y+x}{y-x} = \dfrac{4 + \frac{1}{3}}{4 - \frac{1}{3}}$

$= \dfrac{12+1}{12-1} = \dfrac{13}{11}$

**63.** (4) $x^2 + \dfrac{1}{x^2} - 6$

$= \left(x - \dfrac{1}{x}\right)^2 + 2 - 6$

$= \left(x - \dfrac{1}{x}\right)^2 - 4 = \left(x - \dfrac{1}{x}\right)^2 - 2^2$

$= \left(x - \dfrac{1}{x} + 2\right)\left(x - \dfrac{1}{x} - 2\right)$

$\therefore$ Required difference

$= x - \dfrac{1}{x} + 2 - x + \dfrac{1}{x} + 2$

$= 4$

**64.** (3) $x + \dfrac{1}{x} = \sqrt{13}$

On squaring both sides,

$\left(x + \dfrac{1}{x}\right)^2 = 13$

$\Rightarrow x^2 + \dfrac{1}{x^2} + 2 = 13$

$\Rightarrow x^2 + \dfrac{1}{x^2} = 11$..... (i)

Again, $\left(x - \dfrac{1}{x}\right)^2 + 2 = 11$

$\Rightarrow \left(x - \dfrac{1}{x}\right)^2 = 11 - 2 = 9$

$\Rightarrow x - \dfrac{1}{x} = \sqrt{9} = 3$

On cubing both sides,

$\left(x - \dfrac{1}{x}\right)^3 = 3^3 = 27$

$\Rightarrow x^3 - \dfrac{1}{x^3} - 3\left(x - \dfrac{1}{x}\right) = 27$

$\Rightarrow x^3 - \dfrac{1}{x^3} - 3 \times 3 = 27$

$\Rightarrow x^3 - \dfrac{1}{x^3} = 27 + 9 = 36$ .... (ii)

$\therefore \left(x^2 + \dfrac{1}{x^2}\right)\left(x^3 - \dfrac{1}{x^3}\right)$

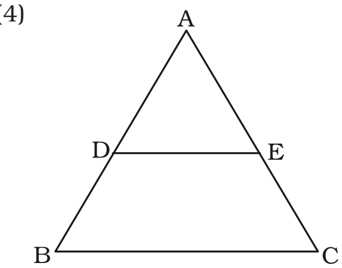
$= 11 \times 36$

$\Rightarrow x^5 - \dfrac{1}{x^5} + x - \dfrac{1}{x} = 396$

$\Rightarrow x^5 - \dfrac{1}{x^5} + 3 = 396$

$\Rightarrow x^5 - \dfrac{1}{x^5} = 396 - 3 = 393$

**65.** (4)




DE || BC

$\therefore \angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA – similarity,

$\Delta ADE \sim \Delta ABC$

$\therefore \dfrac{AD}{DB} = \dfrac{AE}{EC}$

$\Rightarrow \dfrac{x}{x-3} = \dfrac{x+3}{x-2}$

$\Rightarrow x(x-2) = (x+3)(x-3)$

$\Rightarrow x^2 - 2x = x^2 - 9$

$\Rightarrow -2x = -9 \Rightarrow x = \dfrac{9}{2} = 4.5$

**66.** (3) Let $a = 18$ cm, $b = 24$ cm, $c = 30$ cm

Semi-perimeter = s $= \dfrac{a+b+c}{2}$

$= \dfrac{18+24+30}{2} = \dfrac{72}{2} = 36$

$\therefore$ Area of $\Delta$ ABC

$= \dfrac{4}{3}\sqrt{s(s-a)(s-b)(s-c)}$

$= \dfrac{4}{3}\sqrt{36(36-18)(36-24)(36-30)}$

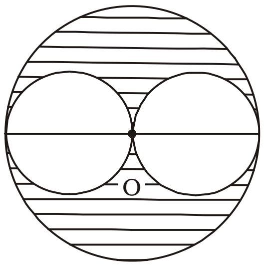
$= \dfrac{4}{3}\sqrt{36 \times 18 \times 12 \times 6}$

$= \dfrac{4}{3}\sqrt{6 \times 6 \times 6 \times 3 \times 6 \times 3 \times 2 \times 2}$

$= \dfrac{4}{3} \times 6 \times 6 \times 3 \times 2$

= 288 sq. cm

**67.** (3)




Area of larger circle = $\pi R^2$

$= \frac{22}{7} \times 14 \times 14$ sq. cm

= 616 sq. cm

Area of a smaller circle

$= \frac{22}{7} \times 7 \times 7$ sq. cm

= 154 sq. cm

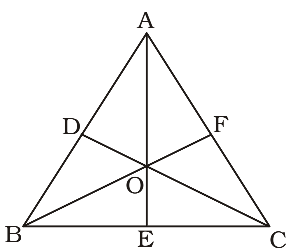
$\therefore$ Area of the shaded region

= (616 – 154 × 2) sq. cm

= (616 – 308) sq. cm

= 308 sq. cm

**68.** (3)




BC = $a$ ; CA = $b$

AB = $c$

$\frac{AO}{OE} = \frac{b+c}{a}$ ; $\frac{CO}{OD} = \frac{b+a}{c}$

$\therefore \frac{b+c}{a} = \frac{5}{4}$

$\Rightarrow \frac{b+c+a}{a}$

$= \frac{5+4}{4} = \frac{9}{4}$ ..... (i)

$\frac{b+a}{c} = \frac{3}{2}$

$\Rightarrow \frac{a+b+c}{c}$

$= \frac{3+2}{2} = \frac{5}{2}$ .... (ii)

On dividing equation (ii) by (i),

$\frac{a}{c} = \frac{5}{2} \times \frac{4}{9} = \frac{10}{9} \Rightarrow a = 10k;$

$c = 9k$

$\therefore \frac{b+c}{a} = \frac{5}{4} \Rightarrow 4b + 36k$

$= 10k \times 5$

$\Rightarrow 4b = 50k - 36k = 14k$

$\Rightarrow b = \frac{14k}{4} = \frac{7k}{2}$

$\therefore \frac{BO}{OF} = \frac{c+a}{b} = \frac{10k+9k}{\frac{7k}{2}}$

$= \frac{19 \times 2}{7} = \frac{38}{7}$

**69.** (1) $\tan\frac{\theta}{2} + \cot\frac{\theta}{2}$

$= \frac{\sin\frac{\theta}{2}}{\cos\frac{\theta}{2}} + \frac{\cos\frac{\theta}{2}}{\sin\frac{\theta}{2}}$

$= \frac{\sin^2\frac{\theta}{2} + \cos^2\frac{\theta}{2}}{\sin\frac{\theta}{2}.\cos\frac{\theta}{2}}$

$= \frac{1 \times 2}{2\sin\frac{\theta}{2}.\cos\frac{\theta}{2}}$

$= \frac{2}{\sin\theta} = 2 \operatorname{cosec}\theta$

**70.** (4) $\frac{\sec^3 x - \tan^3 x}{\sec x - \tan x} - 2\tan^2 x - \sec x.\tan x$

$= \frac{(\sec x - \tan x)(\sec^2 x + \tan^2 .x + \sec x.\tan x)}{(\sec x - \tan x)}$

$- 2\tan^2 x - \sec x.\tan x$

$= \sec^2 x + \tan^2 x + \sec x.\tan x - 2\tan^2 x - \sec x.\tan x$

$= \sec^2 x - \tan^2 x = 1$

**71.** (4) $\sin^8\theta + \cos^8\theta - 1 = 0$

$\Rightarrow \sin^8\theta + \cos^8\theta = 1$

$\Rightarrow (\sin^4\theta)^2 + (\cos^4\theta)^2 = 1$

$\Rightarrow (\sin^4\theta + \cos^4\theta)^2 - 2\sin^4\theta.\cos^4\theta = 1$

$\Rightarrow \{(\sin^2\theta + \cos^2\theta)^2 - 2\sin^2\theta.\cos^2\theta\}^2 - 2\sin^4\theta.\cos^4\theta = 1$

$\Rightarrow (1 - 2\sin^2\theta.\cos^2\theta)^2 - 2\sin^4\theta.\cos^4\theta = 1$

$\Rightarrow 1 + 4\sin^4\theta.\cos^4\theta - 4\sin^2\theta.\cos^2\theta - 2\sin^4\theta.\cos^4\theta = 1$

$\Rightarrow (2\sin^4\theta.\cos^4\theta - 4\sin^2\theta.\cos^2\theta) = 0$

$\Rightarrow 2\sin^2\theta.\cos^2\theta(\sin^2\theta.\cos^2\theta - 2) = 0$

$\therefore \sin^2\theta.\cos^2\theta = 2$

**72.** (2) Marks obtained by all students.

Maths $\Rightarrow$ 96 + 99 + 99 + 89 + 92 = 475

Science $\Rightarrow$ 90 + 94 + 99 + 96 + 92 = 471

**73.** (3) It is obvious from the table.

Total marks of student 3

= 89 + 99 + 99 + 92 = 379

**74.** (2) Sum of four maximum marks :

Student-3 $\Rightarrow$ 100 + 99 + 99 + 92 = 390

Student-2 $\Rightarrow$ 100 + 99 + 94 + 89 = 382

Student-5 $\Rightarrow$ 100 + 95 + 92 + 92 = 379

Student-4 $\Rightarrow$ 100 + 96 + 91 + 89 = 376

**75.** (3) Average marks in Hindi

$= \frac{81+89+92+91+86}{5}$

$= \frac{439}{5}$

Average marks in English

$= \frac{87+74+89+62+95}{5}$

$= \frac{407}{5}$

$\therefore$ Required per cent

$= \frac{\frac{407}{5}}{\frac{439}{5}} \times 100$

$= \frac{407}{439} \times 100$

= 92.71

**76.** (1) The plural of compound noun — sister-in-law is sisters-in-law.

Hence, My sisters-in-law should be used here.

**77.** (1) Here, These kinds (Plural) of clothes .... should be used.

**78.** (3) **Concede (Verb)** = to admit that something is true, logical etc.

**79.** (1) **Swear-in** = to make somebody promise to do a job correctly.

**80.** (2) **Cantankerous (Adjective)** = bad-tempered and always complaining; quarrelsome.

**Look at the sentence :**

He's getting a bit cantankerous in his old age.

**81.** (3) **Connoisseur (Noun)** = an expert on matters involving the judgement of beauty, quality or skill in art, food or music ; discerning judge.

**Look at the sentence :**

He was a well-known connoisseur of art.

**82.** (4) **Nugatory (Adjective)** = worth nothing or of little value; useless and futile.

**Productive (Adjective)** = resulting in or providing a large amount or supply of something; having positive results.

**Look at the sentences :**

The random use of extravagant superlatives is silly and nugatory.

Theirs was a very productive partnership.

**83.** (1) **Naive (Adjective)** = artless; showing a lack of experience, wisdom or judgement.

**Look at the sentence :**

He has a very naive attitude towards politics.

**84.** (2) **Mealy-mouthed** = not willing or honest enough to speak in a direct or open way about what you really think; soft-spoken; artificial.

**Look at the sentence :**

He doesn't intend to be mealy-mouthed with the country's leaders.

**85.** (4) **By fits and starts** = irregularly; frequently starting and stopping again; not continuously.

**Look at the sentence :**

Because of other commitments I can only write my book by/in fits and starts.

**86.** (2) Each part of Not only ..... but also agrees with same part of speech.

Hence, helped her not only by should be used.

**87.** (1) The sentence shows past time. Moreover, **ago** has been used.

Hence, Past Simple should be used here.

**90.** (4) **Sovereignty (Noun)** = complete power to govern a country.

**Look at the sentence:**

The country claimed sovereignty over the island.

**91.** (2) **Perseverance (Noun)** = the quality of continuing to try to achieve a particular aim.

**94.** (3) Why + is/am/are + Subject + $V_3$ + by + Object.

**95.** (1) said ⇒ wanted to know

What can I do for you ? ⇒ What he could do for her.

**96.** (1) **Tremendous (Adjective)** = very great; huge; remarkable.

**97.** (2) **Unprecedented (Adjective)** = that has never happened, been done or been known before.

**98.** (3) **Bleak (Adjective)** = not encouraging or giving any reason to have hope.

**100.** (1) **Prone (Adjective)** = likely to suffer from something or to do something bad; liable.

❒❒❒

SET 3

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 06.08.2017 (Shift-I)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Yellow : Lemon :: Purple : ?
(1) Apple (2) Brinjal
(3) Mango (4) Onion

**2.** Select the related letters from the given alternatives :
IJK : RQP :: TUV : ?
(1) CDE (2) YZZ
(3) GFE (4) DCB

**3.** Select the related number from the given alternatives :
95 : 105 :: 89 : ?
(1) 109 (2) 809
(3) 111 (4) 98

**4.** Select the odd word from the given alternatives :
(1) sister (2) nephew
(3) daughter (4) aunt

**5.** Select the odd letters from the given alternatives :
(1) MLN (2) FED
(3) JIH (4) RQP

**6.** Select the odd number from the given alternatives :
(1) 1600 (2) 2500
(3) 3600 (4) 4000

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.
Smart, Aspire, Castle, Abysmal, Accost, ?
(1) Shop (2) Class
(3) Showman (4) Duties

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
BCD, EFG, IJK, NOP, TUV, ?
(1) YZZ (2) ZZB
(3) BCD (4) ABC

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.
0.05, –0.1, ? , –0.4, 0.8
(1) –0.2 (2) 0.25
(3) –0.25 (4) 0.2

**10.** Mishti's birthday is on Thursday 27th April. On what day of the week will be Aradhya's birthday in the same year, if Aradhya was born on 20th October?
(1) Friday (2) Wednesday
(3) Saturday (4) Thursday

**11.** The weights of 4 boxes are 80, 60, 90 and 70 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes?
(1) 300 (2) 230
(3) 220 (4) 290

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**SANCTION**
(1) STOIC (2) TACOS
(3) STONE (4) SONIC

**13.** If CHANTED is coded as ZEXKQBA, then how will MAY be coded as?
(1) XIG (2) JXV
(3) OBI (4) XAV

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
12 × 6 ÷ 5 + 4 = ?
(1) 8 (2) –18
(3) 42 (4) 18

**15.** If 75$26 = 4, 69$53 = 7 then what is the value of 82$46 = ?
(1) 62 (2) 56
(3) 0 (4) 91

**16.** A woman in a shopping complex walks 150 m East, then she turns North and walks 180 m, then she turns West and walks 70 m, then she turns to her left and walks 180 m. Where is she now with reference to her starting position?
(1) 80 m West
(2) 220 m East
(3) 80 m East
(4) 220 m West

**17.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
**Statements :**
Some wild are carnivores.
All wild are lions.
**Conclusions :**
I. All carnivores are lions.
II. Some lions are carnivores.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

**18.** In a row, there are 6 boys between A and B and A being the first boy in row. There are 3 boys between B and C. If there are 12 boys after C, then how many minimum boys are there in the row?
(1) 20 (2) 16
(3) 24 (4) 18

**19.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
PNR, RQV, TTZ, ?, XZH
(1) VWB (2) UXC
(3) VWD (4) UXE

**20.** Six years ago Parvez's age was same as the present age of Manish. If the present age of Parvez is one-fourth more than that of Manish's present age, then in how many years will Parvez's age become double of Manish's present age?
(1) 6 (2) 12
(3) 15 (4) 18

**21.** In the following question, select the word which cannot be formed using the letters of the given word.
**INFORMATION**
(1) NATION (2) INFRA
(3) RATION (4) MATER

**22.** If 8 θ 12 δ 6 = 60 and 13 θ 15 δ 11 = 74, then 18 θ 21 δ 15 = ?
(1) 161 (2) 139
(3) 153 (4) 147

**23.** In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
*a _ c a a b _ a _ b c a a b _ a _ b _ a*
(1) *cbacba* (2) *bcacac*
(3) *acbaca* (4) *bbacaa*

**24.** In the following question, select the missing number from the given alternatives :
9, 10, 13, 22, 49, ?
(1) 117 (2) 126
(3) 115 (4) 130

**25.** If 14 (16) 18 and 33 (64)25, then what is the value of 'A' in 25 (49) A?
(1) 32 (2) 18
(3) 24 (4) 32 or 18

## GENERAL AWARENESS

**26.** The _______ curve represents the demand of all consumers in the market taken together at different levels of the price of the good.
(1) monotonic
(2) indifferent
(3) market demand
(4) diminishing

**27.** The market structure called monopoly exists where there is exactly ______ seller in any market.
(1) One (2) Two
(3) Five (4) Ten

**28.** In which year was Communist Party of India - Marxist (CPI-M) founded?
(1) 1885 (2) 1980
(3) 1984 (4) 1964

**29.** Which Fundamental Right in the Indian Constitution prohibits trafficking, forced labour, and children working under 14 years of age?
(1) Right to Equality
(2) Right to Freedom
(3) Right against Exploitation
(4) Right to Freedom of Religion

**30.** In 1528, _________ defeated the Rajputs at Chanderi.
(1) Humayun (2) Akbar
(3) Jahangir (4) Babur

**31.** Which of the following was a leader of the Hindustan Socialist Republican Army founded in 1928?
(1) Khudiram Bose
(2) Bhagat Singh
(3) Chandra Shekhar Azad
(4) Subhash Chandra Bose

**32.** Land covers about ______ of the earth's surface.
(1) 20% (2) 30%
(3) 35% (4) 40%

**33.** The uppermost layer over the earth's surface is called the
(1) Mantle (2) Core
(3) Crust (4) Exosphere

**34.** The scientific name of human being is?
(1) Homo Nigrum
(2) Melongena Sapiens
(3) Homo Sapiens
(4) Tigris Solanum

**35.** In a majority of flowering plants, out of the four megaspores, what is the ratio of functional and degenerate megaspores?
(1) 2 : 2 (2) 1 : 3
(3) 3 : 1 (4) 4 : 0

**36.** The body of all complex animals consist of only ______ basic types of tissue(s).
(1) 4000 (2) 400
(3) 40 (4) 4

**37.** Meter in a vehicle that calculates distance covered by the vehicle is called _________.
(1) Speedometer
(2) Odometer
(3) Thermometer
(4) Kilometre

**38.** What is the SI unit of pressure?
(1) Newton (2) Weber
(3) Pascal (4) Henry

**39.** ______ Disk Encryption is a technology (hardware or software) where data is encrypted before storage.
(1) Half (2) Whole
(3) Double (4) Triple

**40.** Oxide of which of the following will turn red litmus blue?
(1) Magnesium
(2) Phosphorus
(3) Sulphur
(4) Carbon

**41.** Which of the following are highly compressible?
(1) Solid
(2) Liquid
(3) Gas
(4) Solid and Liquid

**42.** __________ gases absorb long wave (infrared) radiation from the earth and emit it again towards the earth.
(1) Methane
(2) Greenhouse
(3) Carbon dioxide
(4) Ozone

**43.** In April 2017, Chief Minister Amarinder Singh banned inclusion of names of Ministers and MLA's on Plaques and Foundation Stones in which state?
(1) Maharashtra
(2) Punjab
(3) Himachal Pradesh
(4) Uttar Pradesh

**44.** Who invented bluetooth?
(1) Kirkpatrick Macmillan
(2) Benjamin Franklin
(3) Dr. Jaap Haartsen
(4) Charles Babbage

**45.** Who was the winner of 2015 Men's Cricket World Cup?
(1) India
(2) West Indies
(3) Pakistan
(4) Australia

**46.** Rukmini Devi Arundale was a reputed dancer and choreographer in which form of dancing?
(1) Opera
(2) Lavani
(3) Bharatnatyam
(4) Dandiya

**47.** Who won the 2017 Pulitzer Prize for Drama 'Sweat'?
(1) Lynn Nottage
(2) Hisham Matar
(3) Heather Ann Thompson
(4) Colson Whitehead

**48.** A. The author of the novel 'The Corrections' is Jonathan Franzen.
B. The author of the novel 'A Visit from the Goon Squad' is Edward P Jones.
C. The author of the novel 'Forty Thieves' is Thomas Perry.
Which of the statements given above are correct?
(1) A and B
(2) B and C
(3) A and C
(4) A, B a nd C

**49.** As per World Health Organization, a pilot program testing the first ever malaria vaccine will begin in _______ in the year 2018.
(1) India
(2) Italy
(3) United Kingdom
(4) Africa

**50.** Bhutan does not share its border with which Indian state?
(1) West Bengal
(2) Sikkim
(3) Meghalaya
(4) Arunachal Pradesh

## QUANTITATIVE APTITUDE

**51.** What is the quotient when 7251 is divided by 66?
(1) 110 (2) 109
(3) 111 (4) 112

**52.** Asif is twice as good a workman as Bashir and together they finish a piece of work in 30 days. In how many days will Asif alone finish the work?
(1) 90 (2) 45
(3) 60 (4) 75

**53.** What is the area (in sq. cm.) of a rectangle if its diagonal is 25 cm and one of its sides is 24 cm?
(1) 186 (2) 144
(3) 132 (4) 168

**54.** A shopkeeper marks up his wares by 60% and offers 25% discount. What will be the selling price (in Rs.) if the cost price is Rs. 1600?
(1) 1920 (2) 2000
(3) 2120 (4) 2200

**55.** What number should be added to each of the numbers 55, 100, 65 and 116, so that the resulting numbers are in continued proportion?
(1) 20 (2) 10
(3) 5 (4) 15

**56.** A batsman makes a score of 111 runs in the 10th match and thus increases his average runs per match by 5. What will be his average after the 10th match?
(1) 66 (2) 61
(3) 62 (4) 64

**57.** A vendor buys 6 bananas for Rs. 25 and sells them at 3 for Rs. 20. What is his profit percent ?
(1) 50 (2) 40
(3) 60 (4) 30

**58.** Two labourers A and B are paid a total of Rs. 650 per day. If A is paid 160 per cent of what is paid to B, how much (in Rs.) is B paid?
(1) 250 (2) 400
(3) 350 (4) 450

**59.** A man travelled a distance of 60 km in 7 hours. He travelled partly on foot at the rate of 6 km/hr and partly on bicycle at the rate of 12 km/hr. What is the distance (in km.) travelled on foot?
(1) 15 (2) 9
(3) 48 (4) 24

**60.** The compound interest earned in two years at 12% per annum is Rs. 10176. What is the sum (in Rs.) invested?
(1) 50000 (2) 60000
(3) 40000 (4) 80000

**61.** If $\frac{\left[2\left(\frac{4x}{5}-\frac{3}{4}\right)\right]}{3}-\frac{5}{3}=-\frac{1}{6}$,

then the value of $x$ is

(1) $\frac{4}{15}$ (2) $-\frac{15}{4}$

(3) $-\frac{4}{15}$ (4) $\frac{15}{4}$

**62.** If $a^3 + b^3 = 35$ and $ab = 6$, then what is the value of $(a + b)$ ?
(1) 5 (2) 8
(3) 2 (4) –8

**63.** The sum of a fraction and thrice of its reciprocal is $\frac{73}{20}$.
What is the fraction?

(1) $\frac{4}{5}$ (2) $\frac{9}{4}$

(3) $\frac{4}{9}$ (4) $\frac{5}{4}$

**64.** What is the sum of the first 11 terms of an arithmetic progression if the 4th term is 11 and the 7th term is –4?
(1) –75 (2) 55
(3) 11 (4) 100

**65.** What is the reflection of the point (–1, 3) in the line $x = -4$?
(1) (–7, –3) (2) (–7, 3)
(3) (7, –3) (4) (7, 3)

**66.** The co-ordinates of the centroid of a triangle ABC are (1, –4). What are the co-ordinates of vertex C if co-ordinates of A and B are (3, –4) and (0, 5) respectively ?
(1) (0, 13) (2) (0, 5)
(3) (0, –5) (4) (0, –13)

**67.** $ax + 5y = 8$ has slope of $-\frac{4}{3}$.
What is the value of $a$?

(1) $\frac{20}{3}$ (2) $\frac{3}{20}$

(3) $-\frac{20}{3}$ (4) $-\frac{3}{20}$

**68.** D and E are points on sides AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 2 : 5 and area of ΔABC is 98 sq. cm. what is the area (in sq. cm.) of quadrilateral BDEC?
(1) 90 (2) 98
(3) 94 (4) 86

**69.** What is the value of cot 45° – $\left(\frac{1}{\sqrt{3}}\right)$ cosec 60°?

(1) $\frac{1}{\sqrt{3}}$ (2) $\frac{1}{2}$

(3) $\frac{1}{\sqrt{2}}$ (4) $\frac{1}{3}$

**70.** $\Delta DEF$ is right angled at E. If $m\angle F = 45°$, then what is the value of 2 sin F × cot F?

(1) $\sqrt{2}$ (2) 2

(3) $\frac{1}{\sqrt{2}}$ (4) $\frac{1}{2}$

**71.** If $\cot\theta = \frac{21}{20}$, then what is the value of cosec θ?

(1) $\frac{21}{29}$ (2) $\frac{29}{21}$

(3) $\frac{20}{29}$ (4) $\frac{29}{20}$

**72.** The two equal sides of an isosceles triangle is 20 cm each and the third side is 30 cm. What is the area (in $cm.^2$) of the triangle?

(1) $50\sqrt{5}$ (2) 100

(3) $75\sqrt{7}$ (4) 175

**73.** PQ is the chord of a circle whose centre is O. ROS is a line segment originating from a point R on the circle that intersects PQ produced at point S such that QS = OR. If $\angle QSR = 30°$, then what is the value (in degrees) of $\angle POR$?

(1) 30 (2) 45

(3) 60 (4) 90

**74.** What is the value of tan 6° tan 36° tan 84° tan 54° tan 45°?

(1) $\frac{1}{2}$ (2) $\frac{1}{\sqrt{2}}$

(3) 1 (4) $\frac{1}{3}$

**75.** If $(x-2)^2 + (y+3)^2 + (z-15)^2 = 0$, then what is the value of $x + y + z - 5$?

(1) 5 (2) 9

(3) 15 (4) 20

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** Chilika is the (1)/ largest brackish water (2)/ lagoon in Asia. (3)/No Error (4)

**77.** The climb upside (1)/ the mountains (2)/ was not easy. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Rituals play into the _______ understandings of a society.

(1) tactfully (2) tacit

(3) taciturn (4) tacitly

**79.** Repetition bred a sense of _________ with the characters.

(1) familiarity (2) familiar

(3) familiarly (4) familiarise

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Incensed**

(1) Ecstatic

(2) Exasperated

(3) Elated

(4) Blithe

**81. Transcend**

(1) Eclipse (2) Fizzle

(3) Abort (4) Blunder

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Incapacitate**

(1) Cripple (2) Facilitate

(3) Maim (4) Immobilize

**83. Sentience**

(1) Disregard

(2) Appreciation

(3) Consciousness

(4) Perception

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Rat race**

(1) Make others fight for scraps and get sadistic pleasure out of it

(2) Be an oppressive boss and treat employees like animals

(3) A way of life in which people are caught up in a fiercely competitive struggle for wealth or power

(4) Play games with the lives of other people and see them run aimlesly

**85. Spin one's wheels**

(1) Keep bragging about oneself

(2) Try your luck

(3) Expel much effort for little or no gain

(4) Start a long journey

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** A small makeshift stage **(was construct)** with a red curtain for a backdrop.

(1) are constructed

(2) was constructed

(3) were constructed

(4) No Improvement

**87.** Take out your binoculars and **(will see)** the Andromeda galaxy.

(1) see

(2) saw

(3) seeing

(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Take away or alter the natural qualities of**

(1) Denature

(2) Unadulterated

(3) Authentic

(4) Limpid

**89. Decay of organic matter producing a fetid smell**

(1) Putrefy (2) Crisp

(3) Neoteric (4) Virgin

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) bereving (2) bereaving
(3) bareaving (4) bareving

**91.** (1) frothyiest (2) frotheist
(3) frothyeist (4) frothiest

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. We have seen that, when**
X. think of it as losing its parts and shrivelling to a point
Y. occupy any portion of space, we need not
Z. we deny that a mental image can
(1) ZXY (2) YZX
(3) YXZ (4) ZYX

**93. Another major difference**
X. seven planets around the star
Y. system is the tight packing of the
Z. in comparison with the solar
(1) ZYX (2) ZXY
(3) YZX (4) YXZ

**Directions (94) :** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**94. The homeowners remodelled the house to help it sell.**
(1) The house was remodelled by the homeowners to help it sell.
(2) The house is remodelled by the homeowners to help it sell.
(3) So that it is helped to sell the house was remodelled by the homeowners.
(4) So that it is helped to sell the house is remodelled by the homeowners.

**Directions (95) :** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**95. She asked Ravi, "What is worrying you?"**
(1) She asked Ravi what is worrying him.
(2) She asks Ravi what was worrying him .
(3) She asks Ravi what is worrying him.
(4) She asked Ravi what was worrying him.

**Directions (96–100) :** A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

I had seen this road many years ago when my parents moved to Mundakotukurussi, our ancestral village. However, in those early years, I hadn't begun exploring the countryside. I stored the unknown road in my head under 'One Day I Will'. Ten years ago, when I recovered from a herniated disc, it was to discover that I had a useless left leg. Though I managed to lose the limp, I hated not being able to stride around as I used to. I needed a challenge to tell myself that I wasn't going to buckle to a creature called sciatica. Thus the 'One Day I Will' arrived. "Where does the road by the medical shop lead to?" I asked my parents while visiting them next. "Chalavara," they said. "It's not an easy road to walk on," my father added. "There are too many ups and downs." Chalavara was a superior grade of a village as compared to Mundakotukurussi, with a high school, a fine library, ATMs and several shops. But it also has two approach roads. The one I had chosen was a narrow back road used by the locals and that settled it for me. I needed to know for myself I could walk a road that wasn't going to be easy. And the next day, I would get up and walk that road again.

**96.** What is 'sciatica'?
(1) A type of animal
(2) Name of a real place
(3) Name of an imaginary place
(4) A herniated disc

**97.** Where did the forefathers of the writer live?
(1) Chalavara
(2) Bengaluru
(3) Mundakotukurussi
(4) Out of India

**98.** What disability did the writer suffer due to the herniated disc?
(1) A useless left leg
(2) Depression
(3) Loss of memory
(4) Poor visibility

**99.** 'One Day I Will' is the title of
(1) A village
(2) The unknown road
(3) A tourist place
(4) A path famous with

**100.** What makes Chalavara better than Mundakotukurussi?
(1) It has a high school, a fine library, ATMs and several shops
(2) It is the place where the writer's ancestors were born
(3) It is the place where the writer went to school
(4) It is the place where the writer would walk when he was young

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (3) | **3.** (3) | **4.** (2) |
| **5.** (1) | **6.** (4) | **7.** (4) | **8.** (4) |
| **9.** (4) | **10.** (1) | **11.** (4) | **12.** (3) |
| **13.** (2) | **14.** (2) | **15.** (3) | **16.** (3) |
| **17.** (2) | **18.** (2) | **19.** (3) | **20.** (4) |
| **21.** (4) | **22.** (3) | **23.** (2) | **24.** (4) |
| **25.** (4) | **26.** (3) | **27.** (1) | **28.** (4) |
| **29.** (3) | **30.** (4) | **31.** (3) | **32.** (2) |
| **33.** (3) | **34.** (3) | **35.** (2) | **36.** (4) |
| **37.** (2) | **38.** (3) | **39.** (2) | **40.** (1) |
| **41.** (1) | **42.** (2) | **43.** (2) | **44.** (3) |
| **45.** (4) | **46.** (3) | **47.** (1) | **48.** (3) |
| **49.** (4) | **50.** (3) | **51.** (2) | **52.** (2) |
| **53.** (4) | **54.** (1) | **55.** (1) | **56.** (1) |
| **57.** (3) | **58.** (1) | **59.** (4) | **60.** (3) |
| **61.** (4) | **62.** (2) | **63.** (4) | **64.** (3) |
| **65.** (2) | **66.** (4) | **67.** (1) | **68.** (1) |
| **69.** (4) | **70.** (1) | **71.** (4) | **72.** (3) |
| **73.** (4) | **74.** (3) | **75.** (2) | **76.** (4) |
| **77.** (1) | **78.** (2) | **79.** (1) | **80.** (2) |
| **81.** (1) | **82.** (2) | **83.** (1) | **84.** (3) |
| **85.** (3) | **86.** (2) | **87.** (1) | **88.** (1) |
| **89.** (1) | **90.** (2) | **91.** (4) | **92.** (4) |
| **93.** (1) | **94.** (1) | **95.** (4) | **96.** (4) |
| **97.** (3) | **98.** (1) | **99.** (2) | **100.** (1) |

## EXPLANATIONS

**1.** (2) Colour of Lemon is Yellow. Similarly, colour of Brinjal is Purple.

**2.** (3) I J K ⟶ R Q P (I→R, J→Q, K→P)

Pairs of opposite letters.
Similarly,

T U V ⟶ G F E (T→G, U→F, V→E)

**3.** (3) (100 – 5) : (100 + 5)
↓ ↓
95 : 105

Similarly,
(100– 11) : (100 + 11)
↓ ↓
89 : 111

**4.** (2) Except nephew, all others represent feminine gender.

**5.** (1) F $\xrightarrow{-1}$ E $\xrightarrow{-1}$ D

J $\xrightarrow{-1}$ I $\xrightarrow{-1}$ H

R $\xrightarrow{-1}$ Q $\xrightarrow{-1}$ P

But,

M $\xrightarrow{-1}$ L $\xrightarrow{+2}$ N

**6.** (4) Except the number 4000, all other numbers are perfect squares of certain natural nubers.
1600 = 40 × 40
2500 = 50 × 50
3600 = 60 × 60

**7.** (4) The series is based on the position of 'S'. In each next term, the position of 'S' is shifted one place towards right.

**8.** (4)

B $\xrightarrow{+3}$ E $\xrightarrow{+4}$ I $\xrightarrow{+5}$ N $\xrightarrow{+6}$ T $\xrightarrow{+7}$ **A**
C $\xrightarrow{+3}$ F $\xrightarrow{+4}$ J $\xrightarrow{+5}$ O $\xrightarrow{+6}$ U $\xrightarrow{+7}$ **B**
D $\xrightarrow{+3}$ G $\xrightarrow{+4}$ K $\xrightarrow{+5}$ P $\xrightarrow{+6}$ V $\xrightarrow{+7}$ **C**

**9.** (4) 0.05 –0.1 **0.2** –0.4 0.8
(each term ×(–2))

**10.** (1) Number of days from 27th April to 20th October
= 3 + 31 + 30 + 31 + 31 + 30 + 20
= 176
= 25 weeks + 1 day
∴ 20th October = Thursday + 1 = Friday

**11.** (4) Possible weights of combinations of boxes :
(i) 80 + 60 = 140
(ii) 80 + 90 = 170
(iii) 80 + 70 = 150
(iv) 60 + 90 = 150
(v) 60 + 70 = 130
(vi) 90 + 70 = 160
(vii) 80 + 60 + 90 = 230
(viii) 80 + 60 + 70 = 210
(ix) 80 + 90 + 70 = 240
(x) 60 + 90 + 70 = 220
(xi) 80 + 60 + 90 + 70 = 300

**12.** (3) There is no 'E' letter in the given word. Therefore, the word STONE cannot be formed.

[S] A N [C T I O] N ⇒ STOIC

[S A] N [C T] I [O] N

⇒ TACOS

[S] A N [C] T [I O N]

⇒ SONIC

**13.** (2)

C H A N T E D
↓(–3) each
Z E X K Q B A

Similarly

M A Y
↓(–3) each
J X V

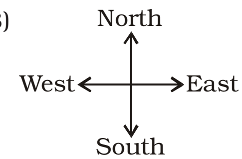
**14.** (2)

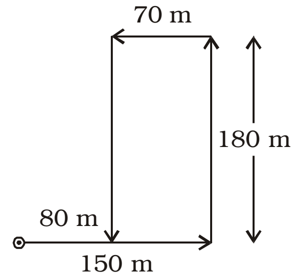
| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

12 × 6 ÷ 5 + 4 = ?
⇒ ? = 12 ÷ 6 – 5 × 4
⇒ ? = 2 – 20 = –18

**15.** (3) 75 $ 26 ⇒ (7 + 5) – (2 + 6) = 4
69 $ 53 ⇒ (6 + 9) – (5 + 3) = 7
Therefore,
82 $ 46
⇒ (8 + 2) – (4 + 6) = 0

**16.** (3)




Now, she is 80m east of her starting position.

**17.** (2) First Premise is Particular Affirmative (I-type).
Second Premise is Universal Affirmative (A-type).

Some carnivores are wild.
All wild are lions.

I + A ⇒ I-type of Conclusion "Some carnivores are lions".
Conclusion II is the Converse of it.

**18.** (2)

12 Boys ⟶
A | | C | | | B | | | | | | | | |
⟷
6 Boys

Therefore, minimum boys in the row = 16

**19.** (3)

P $\xrightarrow{+2}$ R $\xrightarrow{+2}$ T $\xrightarrow{+2}$ **V** $\xrightarrow{+2}$ X
N $\xrightarrow{+3}$ Q $\xrightarrow{+3}$ T $\xrightarrow{+3}$ **W** $\xrightarrow{+3}$ Z
R $\xrightarrow{+4}$ V $\xrightarrow{+4}$ Z $\xrightarrow{+4}$ **D** $\xrightarrow{+4}$ H

**20.** (4) Let six years ago
Parvez's age = $x$ years
and present age of Manish = $x$ years
Present age of Parvez
= $x$ + 6 years

$\Rightarrow (x + 6) - x = \frac{x}{4}$

$\Rightarrow 6 = \frac{x}{4}$

$\Rightarrow x = 24$

$\therefore$ Present age of Manish = 24 years

Present age of Parvez = 24 + 6 = 30 years

Suppose, after $y$ years,

Parvez's age becomes double of Manish's age.

$\therefore 30 + y = 2 \times 24$

$\Rightarrow y = 48 - 30$

$\Rightarrow y = 18$

**21.** (4) There is no 'E' letter in the given word. Therefore, the word MATER cannot be formed.

I [N] F O R M [A T I O N]

$\Rightarrow$ NATION

[I N F] O [R] M [A] T I O N

$\Rightarrow$ INFRA

I N F O [R] M [A T I O N] $\Rightarrow$ RATION

**22.** (3) 8 θ 12 δ 6 = 60

$\Rightarrow (8 \times 12) - (6)^2 = 60$

$\Rightarrow 96 - 36 = 60$

13 Q 15 δ 11 = 74

$\Rightarrow (13 \times 15) - (11)^2 = 74$

$\Rightarrow 195 - 121 = 74$

Therfore,

18 θ 21 δ 15 = ?

$\Rightarrow ?\ (18 \times 21) - (15)^2$

$\Rightarrow ? = 378 - 225 = 153$

**23.** (2) *a*ⓑ*ca*/*ab*ⓒ*a*/ⓐ*bca*/*ab*ⓒ*a*/ⓐ*b*ⓒ*a*

**24.** (4) 9 + 1 = 10

10 + (1 × 3) = 13

13 + (3 × 3) = 22

22 + (9 × 3) = 49

49 + (27 × 3) = [130]

**25.** (4) 14(16) 18 $\Rightarrow (14 - 18)^2 = 16$

33(64)25 $\Rightarrow (33 - 25)^2 = 64$

Therefore,

$\sqrt{49} = 7$

$\Rightarrow 25 + 7 = 32$

or, $25 - 7 = 18$

**26.** (3) The market demand curve is the summation of all the individual demand curves in a given market. It shows the quantity demanded of the good by all individuals at varying price points. The market demand curve is typically graphed and downward sloping because as price increases, the quantity demanded decreases.

**27.** (1) Monopoly is a market structure characterized by a single seller, selling a unique product in the market. In a monopoly market, the seller faces no competition, as he is the sole seller of goods with no close substitute.

**28.** (3) The Communist Party of India (Marxist), popularly referred to as the CPIM is a major recognized national political party in India. It is a left-wing political party with a Communist political ideology. CPIM was formed in 1964, when a faction of the members of the Communist Party of India (CPI) broke away from it. The mass base of the party is drawn from primarily three states namely, West Bengal, Kerala and Tripura.

**29.** (3) Articles 23 and 24 of the Indian Constitution safeguard women and children and others against exploitation of various forms. Article 23 prohibits the traffic in human beings and forced labor such as begar. Article 24 forbids employment of child-labour in factories or in hazardous works.

**30.** (4) The battle of Chanderi was fought between Medini Rai, a key ally of Rana Sanga, and Babur in 1528. Babur offered Shamsabad to Medini Rao in exchange for Chanderi as a peace overture, but the offer was rejected by Rai.

**31.** (3) Hindustan Republican Association (HSRA) was a revolutionary organisation famous for Kakori conspiracy. The sole remaining absconder of the Kakori Conspiracy was Chandra Sekhar Azad. Chandrasekhar led the remaining revolutionaries and on September 9-10, 1928 at Feroz Shah Kotla Maidan of Delhi and he along with Bhagat Singh, Sukhdev, Batukeshwar Dutt, and Rajguru founded the Hindustan Socialist Republican Army or the Garam Dal.

**32.** (2) The Earth's water covers about 70% of the Earth's surface. This means that about 30% of the Earth's surface is land.

**33.** (3) In geology, a crust is the outermost layer of a planet. The crust of the Earth is composed of a great variety of igneous, metamorphic, and sedimentary rocks. The crust is underlain by the mantle. The Earth consists of four concentric layers: inner core, outer core, mantle and crust. The crust is made up of tectonic plates, which are in constant motion.

**34.** (3) Homo sapiens is the scientific name for the only extant human species. Homo is the human genus, which also includes Neanderthals and many other extinct species of hominid; H. sapiens is the only surviving species of the genus Homo.

**35.** (2) Microspores (or pollen grains) are the unicellular, unicleated, haploid and spherical structures, which develop to give rise to male gametophyte. In most flowering plants, a single megaspore mother cell present at the micropylar pole of the nucellus region of the ovule undergoes meiosis to produce four haploid megaspores. Later, out of these four megaspores, only one functional megaspore develops into the female gametophyte, while the remaining three degenerate.

**36.** (4) A tissue is a group of cells that have a similar shape and function. Different types of tissues can be found in different organs. From the evolutionary perspective, tissues appear in more complex organisms. Although there are many types of cells in the human body, they are organized into four

broad categories of tissues: epithelial, connective, muscle, and nervous.

**37.** (2) An odometer is a device that is used for measuring the distance traveled by a vehicle. The word "odometer" is derived from two Greek words meaning path and measure. An odometer may be digital or mechanical.

**38.** (3) Pressure is defined as Force per unit area. The unit of pressure in the SI system is the pascal (Pa), defined as a force of one Newton per square meter.

**39.** (2) Full-disk encryption (FDE) is the encryption of all data on a disk drive, including the program that encrypts the bootable OS partition. It is performed by disk encryption software or hardware that is installed on the drive during manufacturing or via an additional software driver. FDE converts all device data into a form that can be only understood by the one who has the key to decrypt the encrypted data.

**40.** (1) Magnesium is a silvery white metal that burns in air and utilizes atmospheric oxygen from air to form magnesium oxide. Magnesium oxide changes the colour of red litmus paper to blue. This reaction shows that magnesium oxide is basic in nature.

**41.** (1) Compressibility is the measure of how much a given volume of matter decreases when placed under pressure. The kinetic-molecular theory explains why gases are more compressible than either liquids or solids. Gases are compressible because most of the volume of a gas is composed of the large amounts of empty space between the gas particles.

**42.** (2) Greenhouse gases are a group of compounds that are able to trap heat (longwave radiation) in the atmosphere. Increase in the amount of greenhouse gases in the atmosphere enhances the greenhouse effect which is creating global warming and consequently climate change.

**43.** (2) Punjab Chief Minister Captain Amarinder Singh prohibited the inclusion of names of any government functionaries, including ministers and MLAs, on foundation stones and inaugural plaques. The CM himself is not excluded from these orders, which are aimed at building a stronger connect between the government and the people by removing the VIP culture barriers

**44.** (3) Bluetooth is a wireless technology standard for exchanging data over short distances from fixed and mobile devices, and building personal area networks (PANs) developed by Jaap Haartsen.

**45.** (4) The 2015 Cricket World Cup was the 11th Cricket World Cup, jointly hosted by Australia and New Zealand from 14 February to 29 March 2015. Australia defeated New Zealand by 7 wickets to win their fifth ICC Cricket World Cup.

**46.** (3) Rukmini Devi Arundale is considered the most important revivalist of Bharatnatyam from its original 'Sadhir' style prevalent among Devadasis (temple dancers). She is credited with introducing musical instruments such as violin, set and lighting design elements, innovative costumes and jewellery inspired by temple sculptures.

**47.** (1) American playwright Lynn Nottage has been awarded the 2017 Pulitzer Prize for Drama, making her the first woman to win the award twice, having previously won for Ruined in 2009. Nottage was awarded the prize for her play Sweat, about steelworkers in Pennsylvania who have been locked out of their factory.

**48.** (3) The Corrections is a 2001 novel by American author Jonathan Franzen.

A Visit from the Goon Squad is a 2011 Pulitzer Prize-winning work of fiction by American author Jennifer Egan.

**49.** (4) A pilot program testing the first ever malaria vaccine will begin in Africa in 2018, the World Health Organization has said. Children and babies in high-risk areas in Ghana, Kenya and Malawi will receive the RTS,S vaccine, which is also known as Mosquirix.

**50.** (3) The Bhutan-India Border is the international boundary between the Kingdom of Bhutan and the Republic of India. The border is 699 km long, and adjoins the Indian states of Assam (267 km), Arunachal Pradesh (217 km), West Bengal (183 km), and Sikkim (32 km).

**51.** (2) On dividing 7251 by 66, quotient = 109

**Illustration :**

```
66)7251(109
   66
   ---
    651
    594
   ----
   × 57
```

**52.** (2) Let Asif alone do the work in $x$ days.

$\therefore$ Washir will do the work in $2x$ days.

Their 1 day's work

$$= \frac{1}{x} + \frac{1}{2x} = \frac{2+1}{2x} = \frac{3}{x}$$

$$\therefore \frac{2x}{3} = 30$$

$$\Rightarrow x = \frac{30 \times 3}{2} = 45 \text{ days}$$

**53.** (4) Second side of rectangle

$$= \sqrt{25^2 - 24^2} = \sqrt{625 - 576}$$

$$= \sqrt{49} = 7 \text{ cm}$$

Area of rectangle

= length × breadth

= 24 × 7

= 168 $cm^2$

**54.** (1) Let C.P. be ₹ 100

$\therefore$ M.P. = ₹ 160

$\therefore$ S.P. = 75% of 160

$= \frac{160 \times 75}{100}$ = ₹ 120

If C.P. = ₹ 100, then S.P. = ₹ 120

If C.P. = ₹ 1600, then S.P.

$= \frac{120 \times 1600}{100}$ = ₹ 1920

**55.** (1) Let required number be $x$.

$\therefore \frac{55+x}{100+x} = \frac{65+x}{116+x}$

$\Rightarrow (55 + x)(116 + x) = (100 + x)(65 + x)$

$\Rightarrow 55 \times 116 + 55x + 116x + x^2 = 6500 + 100x + 65x + x^2$

$\Rightarrow 6380 + 171x = 6500 + 165x$

$\Rightarrow 17x - 165x = 6500 - 6380$

$\Rightarrow x = \frac{120}{6} = 20$

**OR**

$\frac{55+x}{100+x} = \frac{65+x}{116+x}$

$\Rightarrow \frac{55+x}{65+x} = \frac{100+x}{116+x}$

$\Rightarrow \frac{55+x+65+x}{55+x-65-x} = \frac{100+x+116+x}{100+x-116-x}$

$\Rightarrow \frac{120+2x}{-10} = \frac{216+2x}{-16}$

$\Rightarrow \frac{60+x}{5} = \frac{108+x}{8}$

$\Rightarrow 480 + 8x = 540 + 5x$

$\Rightarrow 3x = 540 - 480 = 60$

$\Rightarrow x = \frac{60}{3} = 20$

**56.** (1) Let previous average be $x$ runs.

According to the question,

$\frac{9x+111}{10} = x + 5$

$\Rightarrow 9x + 111 = 10x + 50$

$\Rightarrow x = 111 - 50 = 61$

$\therefore$ Average after 10th match = 61 + 5 = 66 runs

**57.** (3) C.P. of 1 banana = ₹ $\frac{25}{6}$

S.P. of 1 banana = ₹ $\frac{20}{3}$

$\therefore$ Profit per cent

$= \frac{\frac{20}{3} - \frac{25}{6}}{\frac{25}{6}} \times 100$

$= \frac{\frac{40-25}{6}}{\frac{25}{6}} \times 100$

$= \frac{15}{25} \times 100 = 60\%$

**58.** (1) Let B be paid ₹ $x$.

$\therefore$ Amount paid to A

160% of $x$ = Rs. $\frac{160x}{100}$

According to the question,

$x + \frac{16x}{10} = 650$

$\Rightarrow 10x + 16x = 650 \times 10$

$\Rightarrow 26x = 650 \times 10$

$\Rightarrow x = \frac{650 \times 10}{26}$ = ₹ 250

**59.** (4) Let distance travelled on foot be $x$ km.

$\therefore$ Distance travelled by bicycle = $(60 - x)$ km

According to the question,

$\frac{x}{6} + \frac{60-x}{12} = 7$

$\Rightarrow \frac{2x+60-x}{12} = 7$

$\Rightarrow x + 60 = 84$

$\Rightarrow x = 84 - 60 = 24$ km.

**60.** (3) C.I. $= P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$

$\Rightarrow 10176 = P\left[\left(1+\frac{12}{100}\right)^2 - 1\right]$

$\Rightarrow 10176 = P\left[\left(\frac{112}{100}\right)^2 - 1\right]$

$\Rightarrow 10176 = P[1.2544 - 1]$

$\Rightarrow P = \frac{10176}{0.2544}$ = ₹ 40000

**61.** (4) $\frac{\left[2\left(\frac{4x}{5} - \frac{3}{4}\right)\right]}{3} - \frac{5}{3} = \frac{-1}{6}$

$\Rightarrow \frac{\left(\frac{8x}{5} - \frac{6}{4}\right)}{3} - \frac{5}{3} = -\frac{1}{6}$

$\Rightarrow \frac{32x-30}{20 \times 3} - \frac{5}{3} = -\frac{1}{6}$

$\Rightarrow \frac{32x-30}{60} = \frac{5}{3} - \frac{1}{6}$

$\Rightarrow \frac{32x-30}{60} = \frac{10-1}{6}$

$\Rightarrow 32x - 30 = \frac{60 \times 9}{6}$

$\Rightarrow 32x = 120$

$\Rightarrow x = \frac{120}{32} = \frac{15}{4}$

**62.** (2) $a^3 + b^3 = 35$, $ab = 6$

$\therefore a^3 + b^3 = (a + b)^3 - 3ab(a + b)$

$\Rightarrow 35 = (a + b)^3 - 3 \times 6\,(a + b)$

$\Rightarrow 35 = (a + b)^3 - 18(a + b)$

$\Rightarrow 5 \times 7 = (a + b)\,[(a + b)^2 - 18]$

clearly $a + b = 5$

**63.** (4) Let the fraction be $x$

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$x + \frac{3}{x} = \frac{73}{20}$

$\Rightarrow \frac{x^2+3}{x} = \frac{73}{20}$

$\Rightarrow 20x^2 - 73x + 60 = 0$

$\Rightarrow 20x^2 - 25x - 48x + 60 = 0$

$\Rightarrow 5x(4x - 5) - 12(4x - 5) = 0$

$\Rightarrow (4x-5)(5x-12)=0$

$\therefore 4x-5=0 \Rightarrow x=\frac{5}{4}$ or,

$5x-12=0 \Rightarrow x=\frac{12}{5}$

**64.** (3) Let first term of A.P. be $a$ and common difference be $d$.

$\because a_n = a+(n-1)d$

$a+3d = 11$ .... (i)

$a+6d = -4$ ... (ii)

By equation (i) – (ii),

$$\begin{array}{r} a+3d=11 \\ \underset{-}{a}\underset{-}{+}6d\underset{+}{=}-4 \\ \hline -3d=15 \end{array}$$

$\Rightarrow d=-5$

$\therefore a = 11-3d = 11-3(-5) = 26$

$\because S_n = \frac{n}{2}[2a+(n-1)d]$

$S_{11} = \frac{11}{2}[2\times 26+(11-1)(-5)]$

$= \frac{11}{2}$ [52 – 50 = 11

**65.** (2) $x=-4 \Rightarrow x+4=0$

Image of point (–1, 3) in $x+4$

$=0: \frac{h-x_1}{1} = \frac{-2(x_1-x)}{1}$

$\Rightarrow \frac{h+1}{1} = \frac{-2(-1+4)}{1}$

$\Rightarrow h+1=-6, \Rightarrow h=-7$

$\therefore$ Image = (–7, 3)

**66.** (4) Let co-ordinates of vertex C be $(x, y)$.

centroid $= \frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}$

$\therefore \frac{3+0+x}{3} = 1$

$\Rightarrow 3+x=3 \Rightarrow x=3-3=0$

Again, $\frac{-4+5+y}{3} = -4$

$\Rightarrow 1+y=-12$

$\Rightarrow y=-12-1=-13$

co-ordinates of C = (0, –13)

**67.** (1) $ax+5y=8$

$\Rightarrow 5y=-ax+8$

$\Rightarrow y = \frac{-a}{5}x+\frac{8}{5}$

$[\because y = mx+c]$

$\therefore$ Slope of line $= -\frac{a}{5} = -\frac{4}{3}$

$\Rightarrow a = \left(\frac{-4}{3}\right)(-5) = \frac{20}{3}$

**68.** (1) DE || BC

$\angle ADE = \angle ABC$

$\angle AED = \angle ACB$

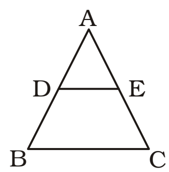
By AA-Similarity

$\Delta ADE \sim \Delta ABC$

AD : DB = 2 : 5

$\therefore AD = 2k, BD = 5k$

$\therefore AB = 7k$




$\therefore \frac{\text{area }(\Delta ABC)}{\text{area }(\Delta ADE)} = \frac{AB^2}{AD^2}$

$\Rightarrow \frac{98}{\text{area }(\Delta ADE)} = \frac{(7k)^2}{(2k)^2}$

$\therefore \text{area }(\Delta ADE) = \frac{98\times 4}{49}$

$= 8 \text{ cm}^2$

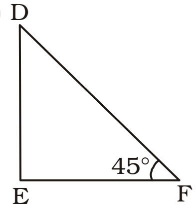
$\therefore$ Area of quadrilateral BDEC

$= 98-8 = 90 \text{ cm}^2$

**69.** (4) $\cot 45° - \frac{1}{\sqrt{3}}\text{cosec } 60°$

$= 1 - \frac{1}{\sqrt{3}} \times \frac{2}{\sqrt{3}} = 1-\frac{2}{3} = \frac{1}{3}$

**70.** (1)




2sin F × cot F

$= 2\sin 45° \times \cot 45°$

$= 2\times\frac{1}{\sqrt{2}}\times 1$

$= \sqrt{2}$

**71.** (4) $\cot\theta = \frac{21}{20}$

$\therefore \text{cosec }\theta = \sqrt{1+\cot^2\theta}$

$= \sqrt{1+\left(\frac{21}{20}\right)^2}$

$= \sqrt{1+\frac{441}{400}} = \sqrt{\frac{841}{400}} = \frac{29}{20}$

**72.** (3) Semi-perimeter(s)

$= \frac{20+20+30}{2} = 35$

Area of triangle

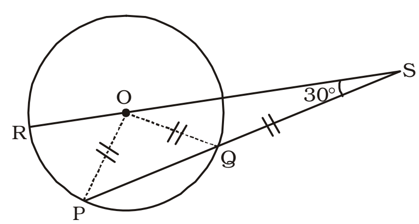
$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{35(35-20)(35-20)(35-30)}$

$= \sqrt{35\times 15\times 15\times 5}$

$= 75\sqrt{7} \text{ cm}^2$

**73.** (4)




In $\Delta QOS$,

$OQ = QS = r$

$\angle SOQ = \angle QSO = 30°$

$\therefore \angle OQP = 30° + 30° = 60°$

$\therefore \angle OPQ = \angle OQP = 60°$

$\therefore$ POQ = 180° – (60° + 60°)

= 60°

$\therefore \angle POR = 180° - (60° + 30°)$

= 180° – 90° = 90°

**74.** (3) tan 6° tan 36° tan 84° tan 54°.tan 45°

= (tan6° tan 84°) (tan 36° tan 54°) tan 45°

= (tan 6° cot 6°) (tan 36° cot 36°) tan 45°

[$\because$ tan (90° – θ) = cotθ; tanθ. cotθ = 1]
= 1 × 1 × 1 = 1

**75.** (2) $(x-2)^2 + (y+3)^2 + (z-15)^2 = 0$

$\Rightarrow x - 2 = 0 \Rightarrow x = 2$

$\Rightarrow y + 3 = 0 \Rightarrow y = -3$

$\Rightarrow z - 15 = 0 \Rightarrow z = 15$

$\therefore x + y + z - 5 = 2 - 3 + 15 - 5 = 17 - 8 = 9$

**77.** (1) **Upside** = the more positive aspect of a bad situation.

**Up (Adverb)** = towards a higher place

**Look at the sentence :**

She climbed up the flight of steps.

So, correct expression = The climb up the mountains...

**78.** (2) **Tacit (Adjective) :** implicit; understood; implied; hinted

**Taciturn (Adjective) :** untalkative; uncommunicative

So, tacit is apt and appropriate.

Factfully & tacitly are adverbs. Here, we require an adjective.

**79.** (1) **Familiarity (Noun) :** conversancy with; conversance with; acquaintance with

Here, we require a noun, not a verb, an adjective or an adverb.

**80.** (2) **Incensed/exasperated (Adjective) :** very angry.

**Look at the sentence :**

Leonara glared back at him incensed.

**Ecstatic/elated (Adjective) :** thrilled; happy; delighted

**Blithe (Adjective) :** heedless; uncaring; careless happy cheerful.

**81.** (1) **Transcend/eclipse (Verb) :** outshine; outrank; overstep

**Look at the sentence :**

He doubts that he will ever transcend Shakespeare.

**Fizzle/abort (Verb) :** end or fail in a weak way

**Blunder (Verb) :** make a mistake; be mistaken

**82.** (2) **Cripple/incapacitate/maim/immobilize (Verb) :** prevent from functioning in a normal way

**Look at the sentence :**

He was incapacitated by a heart attack.

**Facilitate (Verb) :** make easy/easier: make smooth

Working in pairs appears to facilitate learning.

**83.** (1) **Sentience (Noun) :** feeling or sense.

**Look at the sentence :**

His speech was without sentience.

**Disregard (Noun) :** indifference; non-observance

**Appreciation (Noun) :** praise; respect; admiration

**Consciousness (Noun) :** awareness; wakefulness; alertness

**Perception (Noun) :** discernment; recognition.

**84.** (3) a way of life in which people are caught up in a fiercely competitive struggle for wealth or power

**Look at the sentence :**

They quit the rat race in order to live a simple life.

**85.** (3) expel much effort for little or no gain

**Look at the sentence :**

I feel like I am just spinning my wheels here.

**86.** (2) 'Was' is always followed by a past participle ($V_3$) in passive formation.

(was + $V_3$) is used in passive voice of simple past tense.

**87.** (1) see

An imperative sentence starts with a main verb, *i.e.* $V_1$.

So, use 'see' in place of will see.

**88.** (1) **Unadulterated (Adjective):** pure; undiluted

**Authentic (Adjective) :** real; genuine

**Limpid (Adjective) :** clear; transparent; glassy

**89.** (1) **Crisp (Adjective) :** crunchy; brittle

**Neoteric (Adjective) :** new or modern

**Virgin (Noun) :** maiden; unmarried girl

**90.** (2) **bereaving** (= be deprived of a close relation through their death).

**91.** (4) **frothiest** (= most foaming or bubbling)

**94.** (1) The house was remodelled by the homeowners to help it sell.

It is active voice of simple past tense. Its passive voice is formed as follows :

subject + was/were + $V_3$ + by...

**95.** (4) She asked Ravi what was worrying him.

It is direct speech of an interrogative sentence. Its indirect speech is formed as follows:

⇒ Wh-family word acts as a connector.

⇒ Present continuous changes to past continuous

⇒ Pronoun (you) changes to him as per ❑❑❑

SET 4

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 06.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Lips : Smile :: Eyes : ?
(1) Black (2) Wink
(3) Two (4) Spectacles

**2.** Select the related letters from the given alternatives :
EHJ : KNP :: SVX : ?
(1) XZZ (2) YBD
(3) BDF (4) ZBD

**3.** Select the related number from the given alternatives :
357 : 714 :: 468 : ?
(1) 579 (2) 417
(3) 936 (4) 864

**4.** Select the odd word from the given alternatives :
(1) Almond (2) Dates
(3) Walnut (4) Cashew

**5.** Select the odd letters from the given alternatives :
(1) XWV (2) RQP
(3) HFE (4) MLK

**6.** Select the odd number from the given alternatives :
(1) 23 (2) 29
(3) 37 (4) 33

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
Queen, Aqua, Pique, Torque, Antique, ?
(1) Squad
(2) Quadrilateral
(3) Prerequisite
(4) Queue

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
F, I, M, P, T ?
(1) W (2) X
(3) Y (4) Z

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.
72, 65.7, ? , 53.1, 46.8
(1) 59.4 (2) 60.4
(3) 59.3 (4) 60.3

**10.** Kavya's birthday is on Tuesday 4th July. On what day of the week will be Anika's birthday in the same year, if Anika was born on 15th August?
(1) Wednesday
(2) Friday
(3) Saturday
(4) Tuesday

**11.** The weights of 4 boxes are 70, 100, 20 and 40 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes?
(1) 230 (2) 190
(3) 160 (4) 200

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**SYMBOLIC**
(1) BASIC (2) SMILY
(3) CLIMB (4) COILS

**13.** If HEROISM is coded as SVILRHN, then how will ALP be coded as?
(1) LTV (2) ZSX
(3) SGD (4) ZOK

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
15 – 5 + 25 ÷ 10 = ?
(1) 22 (2) –4
(3) 17 (4) 130

**15.** If 23 @ 5 = 56; 6 @ 7 = 26; 5 @ 2 = 14; then what is the value of 7 @ 5 = ?
(1) 26 (2) 24
(3) 19 (4) 52

**16.** A and B start from the same point. A cycles 10 km South, then turns to her right and cycles 9 km. B cycles 2 km North, then turns West and cycles 15 km, then turns to her left and cycles 12 km. Where is B with respect to A now?
(1) 6 km West (2) 6 km East
(3) 24 km West
(4) 24 km East

**17.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
**Statements :**
All wheat are grains.
Some wheat are flour.
**Conclusions :**
I. Some grain are flour.
II. Some flour are wheat.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

**18.** In the following question, by using which mathematical operators will the expression become correct?
27 ? 9 ? 18 ? 24 ? 12
(1) ÷, +, = and +
(2) ÷, ×, < and +
(3) ÷, ×, > and +
(4) +, ÷, = and ÷

**19.** In the following question, select the related word from the given alternatives :
Umbrella : Rain : : Sweater : ?
(1) Wool (2) Wear
(3) Summer (4) Cold

**20.** In the following question, select the odd letters from the given alternatives.

(1) IMOR (2) ORIL
(3) UXCF (4) ADWZ

**21.** In the following question, select the odd number–pair from the given alternatives.
(1) 1444 – 37
(2) 2809 – 54
(3) 2209 – 46
(4) 6084 – 77

**22.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Clamp 2. Cloud
3. Cable 4. Cannal
5. Capricon
(1) 35412 (2) 34512
(3) 43512 (4) 45312

**23.** In the following question, select the missing number from the given series.
28, 30, 36, 48, ?, 98, 140
(1) 68 (2) 65
(3) 72 (4) 67

**24.** If 19 + 2 × 2 + 3 = 369 and 23 + 2 × 6 + 2 = 565, then
7 + 3 × 11 + 3 = ?
(1) 1674 (2) 1382
(3) 1268 (4) 1496

**25.** In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
*a_c a a b_a_b c a a b_a_b_a*
(1) *cbacba* (2) *bcacac*
(3) *acbaca* (4) *bbacaa*

## GENERAL AWARENESS

**26.** For a price taking firm, average revenue is _______ market price.
(1) half of (2) equal to
(3) double of
(4) less than

**27.** The study of individual markets of demand and supply in which the 'players', or the decision makers, were also individuals (buyers or sellers, even companies) who were seen as trying to maximize their profits (as producers or sellers) and their personal satisfaction or welfare levels (as consumers) is called?
(1) Macroeconomics
(2) Econometrics
(3) Microeconomics
(4) Heterodox Economics

**28.** In which year was Nationalist Congress Party (NCP) founded?
(1) 1949 (2) 1999
(3) 1972 (4) 1997

**29.** Which Fundamental Right in the Indian Constitution states that every person has the right to practice, profess and propagate the religion of their choice.
(1) Right to Equality
(2) Right to Freedom
(3) Right against Exploitation
(4) Right to Freedom of Religion

**30.** In 1917, Mahatma Gandhi organised a satyagraha to support the peasants of the Kheda district of ________ .
(1) Bihar
(2) Karnataka
(3) Gujarat
(4) West Bengal

**31.** Which queen of the Kakatiya dynasty ruled over Warangal, part of modern Andhra Pradesh?
(1) Rudramadevi
(2) Ahilyadevi
(3) Bhagwati
(4) Bhanumati

**32.** On the basis of distribution, resources can be classified into _______ ?
(1) Actual resources
(2) Potential resources
(3) Ubiquitous resources
(4) Abiotic resources

**33.** Uranium found in Ladakh is an example of which type of resource?
(1) unnatural resources
(2) Actual resources
(3) Potential resources
(4) Biotic resources

**34.** Which is the longest bone in human body?
(1) febula (2) Tibia
(3) Stapes (4) Femur

**35.** Opposite the micropylar end, is the _______, representing the basal part of the ovule.
(1) hilum (2) funicle
(3) chalaza (4) nucellus

**36.** In unicellular organisms, all functions like digestion, respiration and reproduction are performed by a how many cell(s)?
(1) 1 (2) 2
(3) 3 (4) 4

**37.** Reflection from a smooth surface like that of a mirror is called _________ reflection.
(1) regular (2) irregular
(3) diffused (4) fused

**38.** What is the unit of resistance?
(1) ohm (2) farad
(3) henry (4) weber

**39.** Which of the following is not among the three different forms of if statement?
(1) if…
(2) if…else
(3) if…and
(4) if…else if…else

**40.** PET is a very familiar form of _______ . It is used for making bottles.
(1) Nylon (2) Acrylic
(3) Polyester (4) Rayon

**41.** Which of the following gases is heavier than oxygen?
(1) Carbo1 dioxide
(2) Ammonia
(3) Methane
(4) Helium

**42.** In India, the Air (Prevention and Control of Pollution) Act came into force in 1981, but was amended in __________ to include noise as an air pollutant.
(1) 1987 (2) 1997
(3) 2007 (4) 2017

**43.** In April 2017, Prime Minister Narendra Modi inaugurated phase-I (Link-2) pipeline canal of the ambitious Saurashtra Narmada Avtaran Irrigation (SAUNI) in which state?
(1) Rajasthan
(2) Uttar Pradesh
(3) Gujarat
(4) Madhya Pradesh

**44.** Who invented the vacuum pump?
(1) Otto von Guericke
(2) Cai Lun
(3) Melitta Bentz
(4) William Henry

**45.** Who was the winner of 2017 Australian Grand Prix?
(1) Sebastian Vettel
(2) Lewis Hamilton
(3) Valtteri Bottas
(4) Kimi Raikkonen

**46.** Sanchi Stupa was built by?
(1) Akbar (2) Humayun
(3) Ashoka (4) Narasimha

**47.** Who won the Best Actress in a Leading Role in 62nd Filmfare Awards 2017?
(1) Priyanka Chopra
(2) Deepika Padukone
(3) Alia Bhatt
(4) Katrina Kaif

**48.** A. The author of the novel 'The Grapes of Wrath' is Ayn Rand.
B. The author of the novel 'The Fountainhead' is John Steinbeck.
C. The author of the novel 'Ancillary Justice' is Ann Leckie.
Which of the statements given above are not correct?
(1) A and B
(2) B and C
(3) A and C
(4) A, B and C

**49.** In which city was Ariana Grande performing in when her concert was hit by a terrorist attack in May 2017?
(1) Manchester
(2) Birmingham
(3) Liverpool
(4) London

**50.** The Indian State of Sikkim does not share a border with which neighbouring country?
(1) Nepal
(2) Bangladesh
(3) Bhutan
(4) China

## QUANTITATIVE APTITUDE

**51.** What is the remainder when 6910 is divided by 81?
(1) 25 (2) 23
(3) 21 (4) 19

**52.** A can do 75% of a job in 18 days and B can do 25% of the job in 12 days. If they work on it together, in how many days can they do 75% of the job?
(1) 16 (2) 8
(3) 20 (4) 12

**53.** The area of 4 walls of a cuboid is 57 sq. metre. If its length is 5.5 metre and height is 3 metre, what is its breadth (in metre)?
(1) 4.5 (2) 4
(3) 3 (4) 3.5

**54.** At 30% discount the selling price of an article is Rs. 1050. What is the selling price (in Rs.) if the discount is 15%?
(1) 1200 (2) 1175
(3) 1100 (4) 1275

**55.** What is the fourth proportional to 336, 288 and 161?
(1) 184 (2) 115
(3) 138 (4) 134

**56.** What is the average of all numbers between 9 and 90 which are divisible by 8?
(1) 53 (2) 52
(3) 51 (4) 50

**57.** A trader had 630 kgs. of rice. He sold a part of it at 15% profit and the rest at 8% profit, so that he made a total profit of 12%. How much rice (in kgs.) did he sell at 8% profit?
(1) 270 (2) 300
(3) 280 (4) 290

**58.** 50% of $a = b$, then $b$% of 40 is the same as ________ of $a$.
(1) 0.25 (2) 0.16
(3) 2 (4) 0.2

**59.** Excluding stoppages, the speed of a train is 120 kmph and including stoppages, it is 50 kmph. For how many minutes does the train stop per hour?
(1) 25 (2) 40
(3) 35 (4) 20

**60.** The simple interest and compound interest that can be earned in two years at the same rate at the same principal are Rs. 4000 and Rs. 4180 respectively. What is the rate (percent per annum) of interest?
(1) 18 (2) 4.5
(3) 9 (4) 12

**61.** If $\frac{2x}{3} - \frac{\left[5\left(\frac{4x}{5} - \frac{4}{3}\right)\right]}{2} = \frac{1}{3}$, then what is the value of $x$?
(1) $\frac{9}{4}$ (2) $\frac{4}{9}$
(3) $-\frac{9}{4}$ (4) $-\frac{4}{9}$

**62.** If $a^3 + b^3 = 28$ and $a + b = 4$, then what is the value of $ab$?
(1) –3 (2) 2
(3) 8 (4) 3

**63.** 6 times a fraction is greater than 7 times its reciprocal by 11. What is the fraction?
(1) $\frac{5}{3}$ (2) $\frac{7}{3}$
(3) $\frac{5}{4}$ (4) $\frac{4}{5}$

**64.** What is the sum of the first 11 terms of an arithmetic progression if its first term is –31 and last term is 29?
(1) 42 (2) –11
(3) 28 (4) 12

**65.** What is the reflection of the point (–1 , 5) in the line $x = 1$?
(1) (3, –5) (2) (–3, –5)
(3) (3, 5) (4) (–3, 5)

**66.** What are the co-ordinates of the centroid of a triangle, whose vertices are A (1, –5), B (–4, 0) and C (3, –4)?
(1) (0, 3) (2) (0, –3)
(3) (0, –5) (4) (0, 5)

**67.** The slope of the line AB is $\frac{4}{3}$.
The co-ordinates of points A and B are ($x$ , –5) and (2, –3) respectively. What is the value of $x$?

(1) $\frac{1}{2}$ (2) $-\frac{1}{4}$

(3) 4 (4) –4

**68.** D and E are points on side AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 1 : 4 and area of ΔADE is 6 sq. cm. what is the ratio of area of ΔADE and area of quadrilateral BDEC?

(1) 1 : 12 (2) 1 : 6

(3) 1 : 16 (4) 1 : 24

**69.** What is the value of

$\frac{1}{\sqrt{2}}$ cot 30° + $\frac{1}{\sqrt{3}}$ cosec 60°?

(1) $\frac{(3\sqrt{3}+2\sqrt{2})}{3\sqrt{2}}$

(2) $\frac{(3\sqrt{3}-2\sqrt{2})}{3\sqrt{2}}$

(3) $\frac{(3\sqrt{3}+2\sqrt{2})}{\sqrt{2}}$

(4) $\frac{(3\sqrt{3}-2\sqrt{2})}{\sqrt{2}}$

**70.** ΔABC is right angled at B. If $m\angle A = 60°$, then what is the value of 2 sec C × $\frac{1}{2}$ sin A?

(1) $\frac{1}{2}$ (2) $\frac{1}{3}$

(3) 1 (4) $\frac{1}{\sqrt{2}}$

**71.** If $\tan\theta = \frac{7}{24}$, then what is the value of cosec θ?

(1) $\frac{25}{24}$ (2) $\frac{25}{7}$

(3) $\frac{24}{7}$ (4) $\frac{24}{25}$

**72.** If 27 N 4 is divisible by 11, then what is the value of N?

(1) 2 (2) 7

(3) 9 (4) 6

**73.** A watch having marked price as Rs. 8400 is sold for Rs. 5040 after two successive discounts. If the first discount is 25% then what is the second discount per cent?

(1) 0.15 (2) 0.2

(3) 0.25 (4) 0.3

**74.** If P : Q : R = 2 : 3 : 5, then what is the value of (P + Q) : (Q + R) : (R + P)?

(1) 5 : 8 : 7 (2) 2 : 3 : 5

(3) 5 : 8 : 10 (4) 4 : 9 : 25

**75.** Average age of 20 students is 21 years. Two students leave the group and one new student joins the group. The average now becomes 20 years. If age of one of the students who left the group is 26 years and the one who joined is 20 years, then what is the age (in years) of the other student who left the group?

(1) 20 (2) 14

(3) 22 (4) 16

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** Not too long then, the (1)/ lodge was the only (2)/ place to stay here. (3)/No Error (4)

**77.** He was able to put (1)/ pen of paper only (2)/ much later. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** I sensed the _______ of the argument.

(1) beautiful
(2) beautifully
(3) beauty
(4) beautification

**79.** The beans are _______ turned to avoid burning.

(1) constant
(2) constants
(3) constantly
(4) constantedly

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Drivel**

(1) Intelligent
(2) Blather
(3) Judicious
(4) Sane

**81. Perseverance**

(1) Endurance
(2) Cowardice
(3) Lethargy
(4) Indolence

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Hazardous**

(1) Perilous (2) Precarious
(3) Dicey (4) Secure

**83. Advocacy**

(1) Discouragement
(2) Advancement
(3) Assistance
(4) Backing

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Put one's foot down**

(1) Give up easily without a fight
(2) Learn to dance inspite of being clumsy
(3) Adopt a firm policy when faced with opposition or disobedience
(4) Take the first step of a very long difficult journey

**85. Whistle in the dark**

(1) Pretend to be unafraid
(2) A ray of hope in the worst of times
(3) See a ghost while dreaming
(4) Be blind and fall into a trap

**Directions (86–87) :** In the following questions, out of the four alternatives select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** I **(am always wondered)** what it would be like to be inside a chocolate factory.
(1) have always wonder
(2) have always wondering
(3) have always wondered
(4) No Improvement

**87.** They loaded their ships with spices and silks and **(returns)** with the summer monsoon.
(1) returned
(2) return
(3) returning
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Diminish in value over a period of time**
(1) Escalate
(2) Augment
(3) Aggrandise
(4) Depreciate

**89. Not able to produce children**
(1) Gravid (2) Hebetic
(3) Fecund (4) Sterile

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) loopholes
(2) lupholes
(3) looppholes
(4) luppholes

**91.** (1) wherefor (2) wharefore
(3) wharefor (4) wherefore

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. He does not mean**
X. when he denies that it is causal
Y. to indicate that the relation
Z. is any the less uniform or dependable
(1) YXZ (2) YZX
(3) XZY (4) XYZ

**93. Not only people have buying**
X. environment and health
Y. capacity in the city, people here are
Z. also quite concerned about
(1) YXZ (2) YZX
(3) XZY (4) XYZ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**The director will give you instructions.**
(1) Instructions shall be given to you by the director.
(2) You will get instructions from the director.
(3) You shall get instructions from the director .
(4) Instructions will be given to you by the director.

**95.** In the following questions, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
"What makes you so sad?" she asked Manoj.
(1) She asked Manoj what makes him so sad.
(2) She asks Manoj what made him so sad.
(3) She asked Manoj what made him so sad.
(4) She asks Manoj what makes him so sad.

**Directions (96–100) :** A passage is given with five questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

The quest to find life outside the solar system got a big boost with the discovery of seven Earth-size extra-solar planets, or exoplanets, orbiting a dwarf star about 40 light years away. Unlike earlier discoveries of exoplanets, all seven planets could possibly have liquid water — a key to life as we know it on Earth — with three planets having the greatest chance. This is by far the largest collection of Earth-like planets in the habitable 'Goldilocks' zone of a star — neither too close nor too far from a star, which raises the possibility of liquid water being present on the surface. Only Earth has liquid water in the solar system. Since the dwarf star is much cooler than the Sun, the dimming of light each time a planet passes or transits before the star could be easily recorded from Earth unlike in cases when planets transit a Sun-like bright star. Since the initial discovery of three planets was made using the Chile-based Transiting Planets and Planetesimals Small Telescope, the exoplanet system is called TRAPPIST-1.

**96.** The telescope TRAPPIST is in which country?
(1) Venezuela (2) Argentina
(3) Chile (4) Mexico

**97.** What is essential to have the possibility of life on a planet?
(1) Presence of atmosphere
(2) Presence of gravity
(3) Presence of sunlight
(4) Presence of liquid water

**98.** What is the 'Goldilocks' zone?
(1) It is a mythological place about stars and planets
(2) That place on a planet which has lowest possibility of liquid water.
(3) The correct distance of a planet from its star to have possibility of having liquid water
(4) That place on a planet which has the right amount of sunlight

**99.** What made it easier to record the passage of the planet in front of the star?
(1) The fact that the star is much smaller and cooler than our Sun
(2) The fact that the star is much bigger and cooler than our Sun
(3) The fact that the star is much smaller and hotter than our Sun
(4) The fact that the star is much bigger and hotter than our Sun

**100.** How many planets in our solar system have liquid water?
(1) Two (2) Three
(3) One (4) Four

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (2) | **3.** (3) | **4.** (2) |
| **5.** (3) | **6.** (4) | **7.** (3) | **8.** (1) |
| **9.** (1) | **10.** (4) | **11.** (4) | **12.** (1) |
| **13.** (4) | **14.** (4) | **15.** (2) | **16.** (1) |
| **17.** (3) | **18.** (3) | **19.** (4) | **20.** (1) |
| **21.** (2) | **22.** (2) | **23.** (1) | **24.** (1) |
| **25.** (2) | **26.** (2) | **27.** (3) | **28.** (2) |
| **29.** (4) | **30.** (3) | **31.** (1) | **32.** (3) |
| **33.** (3) | **34.** (4) | **35.** (3) | **36.** (1) |
| **37.** (1) | **38.** (1) | **39.** (3) | **40.** (3) |
| **41.** (1) | **42.** (1) | **43.** (3) | **44.** (1) |
| **45.** (1) | **46.** (3) | **47.** (3) | **48.** (*) |
| **49.** (1) | **50.** (2) | **51.** (1) | **52.** (4) |
| **53.** (2) | **54.** (4) | **55.** (3) | **56.** (2) |
| **57.** (1) | **58.** (4) | **59.** (3) | **60.** (3) |
| **61.** (1) | **62.** (4) | **63.** (2) | **64.** (2) |
| **65.** (3) | **66.** (2) | **67.** (1) | **68.** (4) |
| **69.** (1) | **70.** (3) | **71.** (2) | **72.** (3) |
| **73.** (2) | **74.** (1) | **75.** (2) | **76.** (1) |
| **77.** (2) | **78.** (3) | **79.** (3) | **80.** (2) |
| **81.** (1) | **82.** (4) | **83.** (1) | **84.** (3) |
| **85.** (1) | **86.** (3) | **87.** (1) | **88.** (4) |
| **89.** (4) | **90.** (1) | **91.** (4) | **92.** (2) |
| **93.** (2) | **94.** (4) | **95.** (3) | **96.** (3) |
| **97.** (4) | **98.** (3) | **99.** (1) | **100.** (3) |

## EXPLANATIONS

**1.** (2) Smile is an expression of the face in which lips turn up. Similarly, Wink means closing one eye very briefly and opening it again.

**2.** (2) E H J : K N P

E $\xrightarrow{+6}$ K, H $\xrightarrow{+6}$ N, J $\xrightarrow{+6}$ P

Similarly,

S V X : Y B D

S $\xrightarrow{+6}$ Y, V $\xrightarrow{+6}$ B, X $\xrightarrow{+6}$ D

**3.** (3) 357 : 714 :: 468 : 936

357 $\xrightarrow{\times 2}$ 714; 468 $\xrightarrow{\times 2}$ 936

**4.** (2) Except Dates, all others have hard cover enclosing the fruit. Dates have a hard seed.

**5.** (3) X $\xrightarrow{-1}$ W $\xrightarrow{-1}$ V

R $\xrightarrow{-1}$ Q $\xrightarrow{-1}$ P

M $\xrightarrow{-1}$ L $\xrightarrow{-1}$ K

But,

H $\xrightarrow{-2}$ F $\xrightarrow{-1}$ E

**6.** (4) Except the number 33, all others are Prime Numbers.
33 = 3 × 11

**7.** (3) The sequence is based on the position of 'Q'. In each next term the position of 'Q' shifts one place to the right.

**8.** (1)

F $\xrightarrow{+3}$ I $\xrightarrow{+4}$ M $\xrightarrow{+3}$ P $\xrightarrow{+4}$ T $\xrightarrow{+3}$ **W**

**9.** (1)

72, 65.7, **59.4**, 53.1, 46.8

–6.3 –6.3 –6.3 –6.3

**10.** (4) Number of days from 4th July to 15 August = 27 + 15
= 42 days
= 6 weeks
∴ Birthday of Anika = Tuesday

**11.** (4) Possible weights of combinations of boxes :
(i) 70 + 100 = 170
(ii) 70 + 20 = 90
(iii) 70 + 40 = 110
(iv) 100 + 20 = 120
(v) 100 + 40 = 140
(vi) 20 + 40 = 60
(vii) 70 + 100 + 20 = 190
(viii) 70 + 100 + 40 = 210
(ix) 100 + 20 + 40 = 160
(x) 70 + 100 + 20 + 40 = 230

**12.** (1)There is no 'A' letter in the given word. Therefore, the word BASIC cannot be formed.

[SYM] B O [LI] C ⇒ SMILY

S Y [MB] O [LIC] ⇒ CLIMB

[S] Y M B [OLIC] ⇒ COILS

**13.** (4) H E R O I S M
↓ ↓ ↓ ↓ ↓ ↓ ↓
S V I L R H N

Pairs of opposite letters.
Therefore,
A L P
↓ ↓ ↓
Z O K

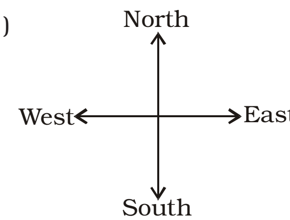
**14.** (4)

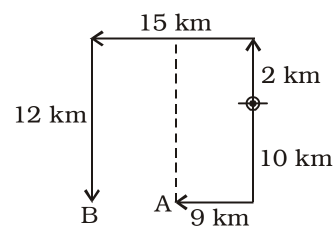
| | |
|---|---|
| + ⇒ × | – ⇒ + |
| × ⇒ ÷ | ÷ ⇒ – |

15 – 5 + 25 ÷ 10 = ?
⇒ ? = 15 + 5 × 25 – 10
⇒ ? = 15 + 125 – 10
⇒ ? = 140 – 10 = 130

**15.** (2) 23 @ 5
⇒ (23 + 5) × 2 = 28 × 2 = 56
6 @ 7
⇒ (6 + 7) × 2 = 13 × 2 = 26
5 @ 2
⇒ (5 + 2) × 2 = 7 × 2 = 14
Therefore,
7 @ 5 = (7 + 5) × 2 = 12 × 2 = 24

**16.** (1)




B is 6 km west of A.

**17.** (3) First Premise is Universal Affirmative (A-type).
Second Premise is Particular Affirmative (I-type).

Some flour are wheat.

All wheat are grain.

I + A ⇒ I-type of Conclusion "Some flour are grain."
Conclusion I is the Converse of it.
Conclusion II is the Converse of the second Premise.

**18.** (3) 27 ÷ 9 × 18 > 24 + 12
⇒ 3 × 18 > 36
⇒ 54 > 36

**19.** (4) Umbrella protects us from rain. Similarly, sweater protects us from cold.

**20.** (1) O R I L

U X C F

A D W Z

Pairs of opposite letters.
But,

I M O R (+2)

The opposite letter of M is N.

**21.** (2) $\sqrt{1444}-1$ = 38 – 1 = 37

$\sqrt{2209}-1$ = 47 – 1 = 46

$\sqrt{6084}-1$ = 78 – 1 = 77

But,

$\sqrt{2809}-1$

= 53 – 1 = 52 (Not 54)

**22.** (2) Arrangement of words as per order in the dictionary :

3. Cable
↓
4. Cannal
↓
5. Capricon
↓
1. Clamp
↓
2. Cloud

**23.** (1)

28 30 36 48 [68] 98 140

+2 +6 +12 +20 +30 +42

+4 +6 +8 +10 +12

**24.** (1) 19 + 2 × 2 + 3
= $(19)^2 + (2)^3$ = 361 + 8 = 369
23 + 2 × 6 +2 = $(23)^2 + (6)^2$
= 529 + 36 = 565
Therefore,
7 + 3 × 11 + 3 = $(7)^3 + (11)^3$
= 343 + 1331 = 1674

**25.** (2) *a* ⓑ *c a*/*a b* ⓒ *a*/ⓐ *b c a*/*a b* ⓒ *a*/ ⓐ *b* ⓒ *a*

**26.** (2) Since price is given for the competitive firm, the average revenue curve of a price taker firm is identical to the marginal curve. Average revenue (AR) thus is equal to marginal revenue (MR) is equal to price (MR = AR = Price).

**27.** (3) Microeconomics is the study of individuals, households and firms' behavior in decision making and allocation of resources. It generally applies to markets of goods and services and deals with individual and economic issues. It deals with what choices people make, what factors influence their choices and how their decisions affect the goods markets by affecting the price, the supply and demand.

**28.** (2) On 25th May 1999, three leaders of the Indian National Congress, who were expelled from the party for strongly disputing the right of Italian-born Sonia Gandhi to become the leader of the INC, joined hands to form a new party under the name of Nationalist Congress Party or NCP. The three leaders were Sharad Pawar, P.A. Sangma and Tariq Anwar.

**29.** (4) The provisions relating to "Right of Freedom of Religion" of the Articles 25 & 28 of the Constitution of India make India a secular state. Article 25 of Indian Constitution grants freedom to every citizen of India to profess, practice and propagate his own religion. The constitution, in the preamble professes to secure to all its citizen's liberty of belief, faith and worship.

**30.** (3) In Kheda, Gujarat, the peasants were frequently plagued by poverty, famines, scant resource, untouchability, alcoholism and British discrimination. This revolt gave India a robust leader in Sardar Vallabhbhai Patel. Gandhiji organised Satyagraha and asked the cultivators not to pay land revenue till their demand for remission was met. The struggle was withdrawn, when the government issued instructions that revenue should be recovered only from those peasants who could afford to pay.

**31.** (1) Rudramadevi ruled over the Kakatiya kingdom, which comprised of parts of present day Telangana and Andhra Pradesh from 1261 to 1289 (or 1295) CE. Venetian merchant and traveler Marco Polo who visited India during this period has written extensively about her rule.

**32.** (3) Classification of natural resources on the basis of distribution :

- Ubiquitous Resource : Resources which are available everywhere on the earth are called ubiquitous resources, e.g. air and water.
- Localised Resource: Resources which are available at select locations on the earth are called localized resources, e.g. coal mines in Jharkhand. Topography, climate and altitude are the major factors which affect the distribution of natural resources.

**33.** (3) Potential resources are those which can exist in a region and whose entire quantity may not be known and they are not used in the present times. These resources can be used in the near future. Uranium found in Ladakh is a potential resource which can be used in the near future.

**34.** (4) The femur, or thigh bone, is the longest, heaviest, and strongest bone in the entire human body. All of the body's weight is supported by the femurs during many activities, such as running, jumping, walking, and standing.

**35.** (3) The Micropyle and Chalaza are the part of the ovule. Chalaza is the tissue where the integuments and nucellus are joined. Nutrients from the plant travel through vascular tissue in the funicle and out-

er integument through the chalaza into the nucellus. Micropyle is the region where integuments open and pollen tube release the male gametes/ nucleus.

**36.** (1) Unicellular organisms refer to living entities that have only one cell, and the cell is responsible for performing all the functions. The functions like feeding, locomotion, expelling wastes, reproduction, etc. are carried out by the single cell. Some examples are amoeba, paramecium, bacteria, and cyanobacteria.

**37.** (1) If the reflecting surface is very smooth, the reflection of light that occurs is called specular or regular reflection. The law of reflection says that for specular reflection the angle at which the wave is incident on the surface equals the angle at which it is reflected. Mirrors exhibit specular reflection.

**38.** (1) Ohm is the S.I derived unit of Resistance. 1 Ohm is the measure of electrical resistance between two points when 1v of Potential difference is applied between these points produce 1A of current in the conductor.

**39.** (3) Key points:

- An if can have zero or one else's and it must come after any else if's.
- An if can have zero to many else if's and they must come before the else.
- Once an else if succeeds, none of the remaining else if's or else's will be tested.

**40.** (3) Polyethylene terephthalate ( PET) is the most common thermoplastic polymer resin of the polyester family and is used in fibres for clothing, containers for liquids and foods, thermoforming for manufacturing, and in combination with glass fibre for engineering resins.

**41.** (1) Carbon dioxide is a colorless gas with a density about 50% higher than that of dry air. Carbon dioxide consists of a carbon atom covalently double bonded to two oxygen atoms. It occurs naturally in Earth's atmosphere as a trace gas at a concentration of about 0.04 percent (400 ppm) by volume.

**42.** (1) The Air (Prevention and Control of Pollution) Act, 1981 an Act of the Parliament of India to control and prevent air pollution in India. It was amended in 1987. The Act makes provisions for the establishing of Central Pollution Control Board (CPCB) at the apex level and State Pollution Control Boards at the state level

**43.** (3) Prime Minister Narendra Modi had inaugurated first phases of link-I, II and III of Saurashtra Narmada Avtaran Irrigation (SAUNI) Yojana in-Gujarat at three separate ceremonies held on September 30, 2016, and April 17 and June 29. SAUNI is an ambitious project to fill up 115 dams of water-starved Saurashtra region by diverting one million acre feet of floodwaters of Narmada.

**44.** (1) A vacuum pump is a device that removes gas molecules from a sealed volume in order to leave behind a partial vacuum. The first vacuum pump was invented in 1650 by Otto von Guericke.

**45.** (1) The 2017 Australian Grand Prix was a Formula One motor race that took place on 26 March 2017 in Melbourne. Sebastian Vettel won the race, which was his and Ferrari's first win since the 2015 Singapore Grand Prix.

**46.** (3) Located at Sanchi Town, Madhya Pradesh, India, this Stupa is the oldest stone structure in India that was built during the Mauryan period. Originally commissioned in the third century BCE by Emperor Ashok, it consists of a central chamber where the relics of Lord Buddha are placed. It was enlisted as a UNESCO World Heritage Site since 1989.

**47.** (3) Aamir Khan bagged the Best Actor Award for his performance in 'Dangal'. Alia Bhatt was honoured with the Best Actress Award for her gritty portrayal of a Bihari migrant in 'Udta Punjab'.

**48.** (*) The Grapes of Wrath is an American realist novel written by John Steinbeck

- The Fountainhead is a 1943 novel by Russian-American author Ayn Rand
- Ancillary Justice is a science fiction novel by the American writer Ann Leckie

**49.** (1) UK police arrested a 23-year old man in connection with a suicide bomb attack in Manchester which killed 23 people, including the attacker and wounded dozens at a concert by US pop singer Ariana Grande.

**50.** (2) Sikkim borders China in its north and east, Bhutan in its east, Nepal in its west and the Indian state of West Bengal in its south.

**51.** (1) On dividing 6910, by 81, remainder = 25

**Illustration :**

```
81)6910(85
   648
   ----
    430
    405
    ---
     25
```

**52.** (4) A does 75% of work in 18 days.

B will do 75% of work in

$= \frac{12 \times 75}{25} = 36$ days.

Working together, both will do

75% of work in $= \frac{xy}{x+y}$

$= \frac{36 \times 18}{36 + 18}$

$= \frac{36 \times 18}{54} = 12$ days

**53.** (2) Area of the four walls of cuboid = $2 \times h (l + b)$

$\therefore 2 \times 3 (5.5 + b) = 57$

$\Rightarrow 2 (5.5 + b) = \frac{57}{3} = 19$

$\Rightarrow 11 + 2b = 19 \Rightarrow 2b = 19 - 11 = 8 \Rightarrow b = 4$ cm.

**54.** (4) Let the marked price of article be Rs. $x$.

According to the question,

70% of $x = 1050$

$\frac{x \times 70}{100} = 1050$

$\Rightarrow x = \frac{1050 \times 100}{70} =$ Rs. 1500

At 15% discount,

Selling price = 85% of 1500

$= \frac{1500 \times 85}{100} =$ Rs. 1275

**55.** (3) Let the fourth proportional be $x$.

$\therefore 336 : 288 :: 161 : x$

$\Rightarrow \frac{336}{288} = \frac{161}{x} \Rightarrow x$

$= \frac{288 \times 161}{336} = 138$

**56.** (2) The least numebr divisible by 8 between 9 and 90 = 16 and the largest number = 88

$\therefore a_n = a + (n - 1) d$

$\Rightarrow 88 = 16 + (n - 1) 8$

$\Rightarrow n = \frac{88 - 16}{8} + 1 \quad \frac{72}{8} + 1 = 10$

Sum of these numbers

$= \frac{n}{2}$ (First number + last number)

$= \frac{10}{2} [16 + 88]$

$= 5 \times 104 = 520$

Required average

$= \frac{520}{10} = 52$

**57.** (1) Let $x$ kg of rice be sold at 8% profit.

$\therefore$ Quantity of rice sold at 15% profit = $(630 - x)$ kg

According to the question,

$x \times \frac{108}{100} + (630 - x) \times \frac{115}{100}$

$= \frac{630 \times 112}{100}$

$\Rightarrow 108x + 72450 - 115x = 70560$

$\Rightarrow 7x = 72450 - 70560 = 1890$

$x = \frac{1890}{7} = 270$ kg

**58.** (4) (50% of $a$) = $b$

$\Rightarrow \frac{a \times 50}{100} = b \Rightarrow \frac{a}{2} = b$

$\Rightarrow a = 2b$

Again, ($b$% of 40) = $\frac{40b}{100} = \frac{2b}{5}$

Let ($x$ of $a$) = $\frac{2b}{5}$

$\Rightarrow$ ($x$ of $2b$) = $\frac{2b}{5}$

$\Rightarrow x = \frac{1}{5} = 0.2$

**59.** (3) Due to stoppages, train covers 70 km less

Time taken in covering 70 km.

$= \frac{70}{120} \times 60$

= 35 minutes

So, train stops for 35 minutes in an hour.

**60.** (3) In 2 years, difference between S.I. and C.I.

= Rs. (4180 – 4000)

= Rs. 180

S.I. for one year

$= \frac{4000}{2} =$ Rs. 2000

S.I. of one year on Rs. 2000

= Rs. 180

Rate = $\frac{\text{S.I.} \times 100}{\text{Time} \times \text{Principal}}$

$= \frac{180 \times 100}{1 \times 2000} = 9\%$

**61.** (1) $\frac{2x}{3} - \frac{\left[5\left(\frac{4x}{5} - \frac{4}{3}\right)\right]}{2} = \frac{1}{3}$

$\Rightarrow \frac{2x}{3} - \frac{\left(4x - \frac{20}{3}\right)}{2} = \frac{1}{3}$

$\Rightarrow \frac{2x}{3} - \frac{(12x - 20)}{6} = \frac{1}{3}$

$\Rightarrow \frac{4x - 12x + 20}{6} = \frac{1}{3}$

$\Rightarrow -8x + 20 = \frac{6}{3} = 2$

$\Rightarrow -8x = 2 - 20 = -18$

$\Rightarrow x = \frac{-18}{-8} = \frac{18}{8} = \frac{9}{4}$

**62.** (4) $a^3 + b^3 = 28$, $a + b = 4$

$\Rightarrow a^3 + b^3 = (a + b)^3 - 3ab (a + b)$

$\Rightarrow 28 = (4)^3 - 3ab (4)$

$\Rightarrow 28 = 64 - 12ab$

$\Rightarrow 12ab = 64 - 28 = 36 \Rightarrow ab$

$= \frac{36}{12} = 3$

**63.** (2) Let the fraction be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$\Rightarrow 6x - \frac{7}{x} = 11$

$\Rightarrow 6x^2 - 7 = 11x$

$\Rightarrow 6x^2 - 11x - 7 = 0$

$\Rightarrow 6x^2 - 14x + 3x - 7 = 0$

$\Rightarrow 2x (3x - 7) + 1 (3x - 7) = 0$

$\Rightarrow (3x - 7) (2x + 1) = 0$

$\Rightarrow x = \frac{7}{3}$ or $x = \frac{-1}{2}$

**64.** (2) $S_n = \frac{n}{2} [a + l]$,

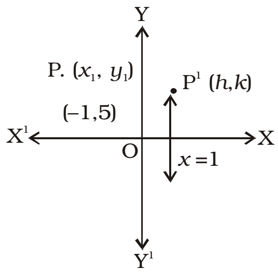
where $a$ = first term,

$l$ = last term

$\therefore S_{11} = \frac{11}{2} [-31 + 29]$

$= \frac{11}{2} \times -2 = -11$

**65.** (3)




k-Co-ordinate remains same.

Reflection of point (–1, 5) in $x$ = 1 :

$h - x_1 = -2\ (x_1 - x)$

$\Rightarrow \frac{h+1}{1} = \frac{-2(-1-1)}{1}$

$\Rightarrow h + 1 = 4 \Rightarrow h = 4 - 1 = 3$

Reflection = (3, 5)

**66.** (2) The co-ordinates of centroid of triangle

$= \left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right)$

$= \left(\frac{1-4+3}{3}, \frac{-5+0-4}{3}\right)$

= (0, –3)

**67.** (1)

slope of line AB $= \frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{4}{3}$

$\Rightarrow \frac{-3-(-5)}{2-x} = \frac{4}{3}$

$\Rightarrow \frac{-3+5}{2-x} = \frac{4}{3}$

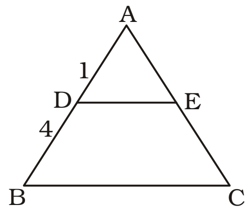
$\Rightarrow 8 - 4x = 6$

$\Rightarrow -4x = 6 - 8$

$\Rightarrow -4x = -2$

$\Rightarrow x = \frac{-2}{-4} = \frac{1}{2}$

**68.** (4)




AD : DB = 1 : 4

AD = $k$, DB = $4k$

AB = $k + 4k = 5k$

DE | | BC

$\therefore \angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA-similarity,

$\Delta ADE \sim \Delta ABC$

$\therefore \frac{\text{area of } (\Delta\ ABC)}{\text{area of } (\Delta\ ADE)} = \frac{(AB)^2}{(AD)^2}$

$\Rightarrow \frac{\text{area of } (\Delta\ ABC)}{6} = \frac{(5k)^2}{(k)^2}$

$\Rightarrow$ are of ($\Delta$ABC) = 150 cm$^2$

area (□ BDCE) = 150 – 6

= 144 cm$^2$

$\frac{\text{area of } (\Delta ADE)}{\text{area of } (\square BDEC)} = \frac{6}{144}$

$= \frac{1}{24} = 1 : 24$

**69.** (1) $\frac{1}{\sqrt{2}} \cot 30^\circ + \frac{1}{\sqrt{3}} \operatorname{cosec} 60^\circ$

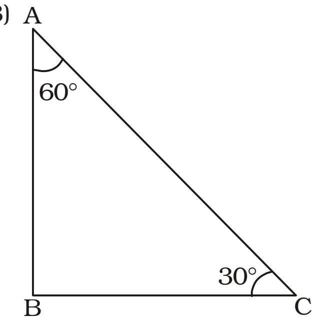
$= \frac{1}{\sqrt{2}} \times \sqrt{3} + \frac{1}{\sqrt{3}} \times \frac{2}{\sqrt{3}}$

$= \frac{\sqrt{3}}{\sqrt{2}} + \frac{2}{3}$

$= \frac{3\sqrt{3}+2\sqrt{2}}{3\sqrt{2}}$



**70.** (3)




$2 \sec C \times \frac{1}{2} \sin A$

$= 2 \sec 30^\circ \times \frac{1}{2} \sin 60^\circ$

$= 2 \times \frac{2}{\sqrt{3}} \times \frac{1}{2} \times \frac{\sqrt{3}}{2}$

$= \frac{4}{\sqrt{3}} \times \frac{\sqrt{3}}{4} = 1$

**71.** (2) $\tan\theta = \frac{p}{b} = \frac{7}{24} = \frac{7k}{24k}$

$h = \sqrt{p^2+b^2} = k\sqrt{7^2+24^2}$

$= k\sqrt{49+576}$

$= k\sqrt{625} = 25\ k$

$\operatorname{cosec}\theta = \frac{h}{p} = \frac{25k}{7k} = \frac{25}{7}$

**72.** (3) 27N4 is divisible by 11.

$\therefore (2 + N) - (7 + 4) = 0$

$\Rightarrow 2 + N = 11$

$\Rightarrow N = 11 - 2 = 9$

**73.** (2) Marked Price of watch = Rs. 8400

Price after first discount

$= \frac{8400 \times 75}{100}$ = Rs. 6300

Second discount

= 6300 – 5040 = Rs. 1260

$\therefore 6300 \times \frac{x}{100} = 1260$

$\Rightarrow x = \frac{1260}{63}$

$= 20\% = \frac{20}{100} = 0.2$

**74.** (1) P : Q : R = 2 : 3 : 5
∴ (P + Q) : (Q + R) : (R + P)
= (2 + 3) : (3 + 5) : (5 + 2)
= 5 : 8 : 7

**75.** (2) Average age of 20 students = 21 years
Total age of 20 students
= 21 × 20 = 420 years.
Total age of 19 students
= 19 × 20 = 380 years.
∴ Total age of two students who left = 420 – 380 = 40 years
∴ Age of second student
= 40 – 26 = 14 years.

**76.** (1) Use 'ago' in place of 'then'
The sentence refers to past time.
Not too long ago → not for a great amount of time in the past

**77.** (2) **Put (or set) pen to paper** (idiomatic expression) = write or begin to write something.
**So, correct expression** = put pen to paper only.

**78.** (3) **Beautiful** is an adjective, which requires a noun after it.
**Beautifully** = adverb
**Beauty (Noun)** = loveliness; charm
**Beautification (Noun)** = process of making visual improvements to a person/place/thing.

**79.** (3) **Constantly (Adverb)** = continuously; always; all the time.
An adverb modifies the verb, *i.e.* turned.
**Constant (Adjective)** = continuous; persistent.

**80.** (2) **Drivel/blather (Noun)** = nonsense.
**Look at the sentence :**
Don't talk much drivel.
**Intelligent/judicious/sane (Adjective)** = clever; bright; brilliant.

**81.** (1) **Perseverance/endurance (Noun)** = tenacity; determination
**Look at the sentence :**
Medicine is a field which requires dedication and perseverance.
**Lethargy/indolence (Noun)** = inertia; sluggishness; inactivity.
**Cowardice (Noun)** = timidity

**82.** (4) **Hazardous/perilous/precarious/dicey (Adjective)** = dangerous; risky
**Look at the sentence :**
We work in hazardous conditions.
**Secure (Adjective)** = safe; sound
**Look at the sentence :**
Are you secure in this house ?

**83.** (1) **Advocacy/backing (Noun)** = acceptance; defence; approval.
**Look at the sentence :**
His outspoken advocacy of the agreement.
**Discouragement (Noun)** = disappointment; hopelessness.
**Look at the sentence :**
Don't give in to discouragement.
**Assistance (Noun)** = help; aid.

**84.** (3) **Adopt a firm policy when** faced **with opposition/disobedience**.
**Look at the sentence :**
You can't just let him do what he wants. You will have to put your foot down.

**85.** (1) **Pretend to be unafraid**
**Look at the sentence :**
He says that his business will improve next year. But he is probably just whistling in the dark.

**86.** (3) **have always wondered**
'wondered' is not an adjective. It is a main verb.
So, the use of Present Perfect tense is apt and appropriate. It is formed as follows :
Subject + has/have + $V_3$ + Object

**87.** (1) **returned**
It is simple past tense (loaded).
So, the use of 'returned' is apt and appropriate.
**Remember** = Past tense is followed by past tense.

**88.** (4) **Escalate/augment/aggrandise (Verb)** = increase; enhance
**Look at the sentence :**
The value of shares has depreciated.

**89.** (4) **Fecund/gravid (Adjective)** = pregnant
**Hebetic (Adjective)** = pertaining to or occurring in puberty.
**Look at the sentence :**
The disease had made him sterile.

**90.** (1) **loopholes** = means of escape.

**91.** (4) **wherefore** = for what reason.

**94.** (4) **Instructions will be given to you by the director**
It is active voice of simple future tense. Its passive voice is formed as follows :
Subject + will be/ shall be + $V_3$ + by + Obj...

**95.** (3) **She asked Manoj what made him so sad.**
It is direct speech of an interrogative sentence. Its indirect speech is formed as follows :
⇒ Connector 'wh-family word (What) will remain there.
⇒ Simple Present changes to Simple Past
⇒ The interrogative sentence changes to the assertive sentence.
⇒ Pronoun changes as per $\frac{SON}{123}$

❑❑❑

SET 5

# SOLVED PAPER
# SSC CGL TIER-I (CBE) EXAM

**Held on : 08.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Car : Road : : Ship : ?
(1) Water
(2) Air
(3) Road
(4) Both Air and Water

**2.** In the following question, select the related letters from the given alternatives :
GLOW : FJNU : : PTEL : ?
(1) ORFN (2) ORDJ
(3) ORJD (4) OPNF

**3.** In the following question, select the related number from the given alternatives :
5 : 124 : : 6 : ?
(1) 215 (2) 216
(3) 217 (4) 220

**4.** In the following question, select the odd word pair from the given alternatives :
(1) Error : Accurate
(2) Careless : Casual
(3) Strength : Lethargy
(4) Gloomy : Cheerful

**5.** In the following question, select the odd letters from the given alternatives :
(1) FUGT (2) KPLO
(3) DWEV (4) CWDX

**6.** In the following question, select the odd number pair from the given alternatives :
(1) 11 – 120 (2) 17 – 290
(3) 21 – 442 (4) 12 – 145

**7.** Arrange the given words in the sequence in which they occur in the dictionary.
1. Pragmatic 2. Protect
3. Pastel 4. Postal
5. Pebble
(1) 43521 (2) 35412
(3) 34512 (4) 43512

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
Q, P, O, N, ?
(1) M (2) L
(3) O (4) J

**9.** In the following question, select the missing number from the given alternatives :
6, 9 , 15, 24, 39, 63, ?
(1) 97 (2) 115
(3) 102 (4) 124

**10.** P and Q are brothers. P is the father of S. R is the only son of Q and is married to U. How is U related to S?
(1) Sister-in-law
(2) Mother-in-law
(3) Sister
(4) Mother

**11.** Nine years later, age of B will be equal to the present age of A. Sum of A's age 3 years later and B's age 4 years ago is 76. If C is half of the present age of B, then what will be C's age (in years) after 10 years?
(1) 32 (2) 36
(3) 27 (4) 31

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**HERRINGBONE**
(1) BINER (2) NONE
(3) BANE (4) HINGE

**13.** In a certain code language, "NIGHT" is written as "ODDGM" and "DARK" is written as "GOYC". How is "GREEN" written in that code language?
(1) IABPF (2) MCBNB
(3) OGHVL (4) FPBAI

**14.** In the following question, correct the equation by interchanging two signs.
4 × 3 – 6 ÷ 2 + 7 = 8
(1) – and + (2) × and –
(3) ÷ and × (4) × and +

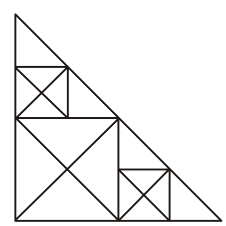
**15.** If 3 # 4 % 8 = 6 and 9 % 4 # 3 = 12, then
12 % 6 # 24 = ?
(1) 4 (2) 3
(3) 5 (4) 6

**16.** In the folloiwng question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

| | | |
|---|---|---|
| 7 | 6 | 3 |
| 2 | 5 | 1 |
| 8 | 9 | 4 |
| 115 | 273 | ? |

(1) 14 (2) 15
(3) 16 (4) 18

**17.** How many triangles are there in the given figure ?



(1) 32 (2) 34
(3) 37 (4) 40

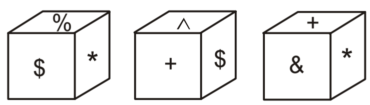
**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.
**Statements :**
Some boys are hardworking.
No intelligent is boy.

**Conclusions :**

I. Some hardworking are not intelligent.
II. All hardworking are intelligent.
III. Some intelligent are not hardworking.

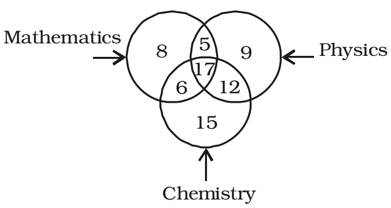
(1) Only Conclusion I follows
(2) Only Conclusions I and III follow.
(3) All Conclusions follow.
(4) No Conclusion follows.

**19.** Three positions of a cube are shown below. What will come opposite to face containing '$'?




(1) %   (2) &
(3) ^   (4) +

**20.** In the given figure, how many people study only 2 subjects?

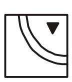



(1) 11   (2) 23
(3) 12   (4) 40

**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

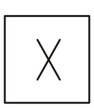
**Answer Figures :**

(1) (2) 

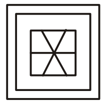
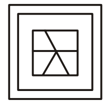
(3) (4)

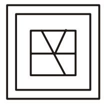
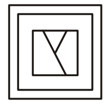
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



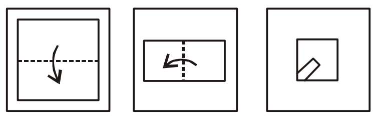
**Answer Figures :**

(1)   (2) 

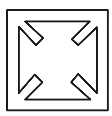
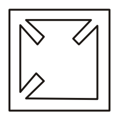
(3)   (4) 

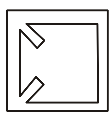
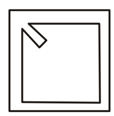
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



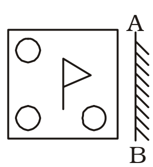
**Answer Figures :**

(1)   (2) 

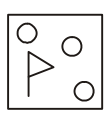
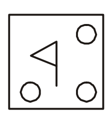
(3)   (4) 

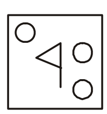
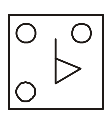
**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1)   (2) 

(3)   (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'C' can be represented by 10, 34 etc and 'D' can be represeted by 85, 98 etc. Similarly, you have to identify the set for the word **'STEAL'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | T | S | C | K | E |
| 1 | C | K | E | T | S |
| 2 | K | E | S | C | T |
| 3 | S | T | K | E | C |
| 4 | E | C | T | S | K |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | P | D | A | I | L |
| 6 | L | I | D | A | P |
| 7 | I | A | L | P | D |
| 8 | D | P | I | L | A |
| 9 | A | L | P | D | I |

(1) 01, 13, 04, 76, 66
(2) 14, 31, 40, 95, 59
(3) 22, 42, 21, 69, 97
(4) 43, 24, 33, 57, 58

## GENERAL AWARENESS

**26.** Which one of the following is a component of Food Security System?
(1) Buffer stock
(2) Minimum support price
(3) Fair price shops
(4) Mid day meals

**27.** What is the accepted average Calorie requirement for rural area in India?
(1) 2100 (2) 2200
(3) 2300 (4) 2400

**28.** Whose recommendation is mandatory to impeach the President of India from his office before the completion of his/her term?
(1) The Prime Minister
(2) The Speaker of the Lok Sabha
(3) The Chief Justice of India
(4) The two houses of the parliament

**29.** How many types of writ are there in the Indian Constitution?
(1) 5 (2) 4
(3) 3 (4) 2

**30.** Who has built the Vijay Stambha (Tower of Victory) in Chittorgarh?
(1) Maharana Pratap
(2) Rana Kumbha
(3) Rana Sanga
(4) Kunwar Durjan Singh

**31.** Who raised the slogan "Swaraj is my birthright and I shall have it"?
(1) Mahatma Gandhi
(2) Subhash Chandra Bose
(3) Bal Gangadhar Tilak
(4) Lala Lajpat Rai

**32.** Which Indian state is the largest in terms of the total area covered ?
(1) Maharashtra
(2) Madhya Pradesh
(3) Rajasthan
(4) Tamil Nadu

**33.** Which Indian state has the longest Coastline?
(1) Kerala
(2) Gujarat
(3) Andhra Pradesh
(4) Tamil Nadu

**34.** Auxiliary bud develops into which of the following part of the plant?
(1) Fruit (2) Leaf
(3) Branch (4) Roots

**35.** Xylem helps in transportation of which of the following?
(1) Food
(2) Water
(3) Nutrients
(4) Both food and water

**36.** Who proposed five kingdom classification?
(1) Ernst Mayr
(2) R. H. Whittaker
(3) M. W. Beijerinck
(4) D. I. Ivanovsky

**37.** What is the other name of Galileo's law of falling bodies?
(1) Law of motion
(2) Newton's first law
(3) Newton's second law
(4) Newton's third law

**38.** Which of the following device is best suited for measuring the temperature inside metallurgical furnaces?
(1) Pyrometer
(2) Thermocouple
(3) Thermometer
(4) Thermistor

**39.** What is the full form of 'LAN'?
(1) Line Area Network
(2) Linear Area Network
(3) Local Area Network
(4) Land Area Network

**40.** Which acid is released when an Ant bites?
(1) Hydrochloric Acid
(2) Formic Acid
(3) Acetic Acid
(4) Phosphoric Acid

**41.** Which among the following is an example of solid sol?
(1) Milk of magnesia
(2) Foam
(3) Coloured gemstones
(4) Rubber

**42.** Which metal is responsible for Itai-Itai disease?
(1) Cadmium
(2) Nickel
(3) Chromium
(4) Mercury

**43.** 'Vikalp' is a scheme launched by Indian Railways to help wait-listed passengers. Which of the following is NOT true about this scheme?
(1) Confirmed berths in alternate trains.
(2) No-extra charges will be taken from passengers.
(3) Wait-listed passengers can avail opportunity of travelling in Rajdhani/Shatabdi/Special trains even when booking made is in other mail/express trains.
(4) Vikalp scheme will be initially available for e-tickets only.

**44.** Who discovered the Cholera causing germ?
(1) Filippo Pacini
(2) Robert Koch
(3) M. Laveran
(4) Felix Hoffman

**45.** Match the following

| | Player | | Sport |
|---|---|---|---|
| 1. | Mithali Raj | a. | Hockey |
| 2. | Poonam Rani | b. | 3000 m Steeplechases |
| 3. | Lalita Babar | c. | Cricket |

(1) 1-c, 2-b , 3-a
(2) 1-a, 2-b, 3-c
(3) 1-a, 2-c, 3-b
(4) 1-c, 2-a, 3-b

**46.** 'Hunar Haat' an exhibition to exhibit and promote the arts and artisans from minority community was launched at which of the following events?
(1) Pushkar Fair, 2016
(2) IITF, New Delhi, 2016
(3) Suraj Kund Craft Mela, 2017
(4) Kumbh Mela, 2015

**47.** Which movie won the award for the best movie at the Oscar Awards 2017?
(1) La La Land
(2) Arrival
(3) Moon light
(4) Manchester by the Sea

**48.** Who is the author of the book titled 'Citizen and Society'?
(1) Pranab Mukherjee
(2) Hamid Ansari
(3) Nandan Nilekani
(4) Satyajit Ray

**49.** With which country India has recently signed a MoU for Water Conservation in India?
(1) France
(2) Germany
(3) Israel
(4) Bangladesh

**50.** Which among the following neighbouring country of India is the largest producer of Opium in the World?
(1) Pakistan
(2) Afghanistan
(3) Sri Lanka
(4) Maldives

## QUANTITATIVE APTITUDE

**51.** How many numbers are there from 300 to 650 which are completely divisible by both 5 and 7 ?
(1) 8 (2) 9
(3) 10 (4) 12

**52.** Raman can do a work in 5 days, Jatin can do the same work in 7 days and Sachin can do the same work in 9 days. If they do the same work together and they are paid Rs. 2860, then what is the share (in Rs.) of Raman?
(1) 1260 (2) 700
(3) 900 (4) 870

**53.** If the diameter of a sphere is 14 cm., then what is the surface area (in cm.$^2$) of the sphere?
(1) 616 (2) 308
(3) 462 (4) 636

**54.** After two successive discounts of 20% and 35%, an article is sold for Rs. 50700. What is the marked price (in Rs.) of the article?
(1) 92500 (2) 98500
(3) 97500 (4) 94000

**55.** Rs. 3200 is divided among A, B and C in the ratio of 3 : 5 : 8 respectively. What is the difference (in Rs.) between the shares of B and C?
(1) 400 (2) 600
(3) 800 (4) 900

**56.** The average of 5 members of a family is 24 years. If the youngest member is 8 years old, then what was the average age (in years) of the family at the time of the birth of the youngest member?
(1) 16 (2) 20
(3) 24 (4) 32

**57.** If the price of pen decreases by 20%, then a man can buy 10 more pens for Rs. 100. What is the new price (in Rs.) of each pen?
(1) 1 (2) 2
(3) 4 (4) 5

**58.** After deducting 60% from a certain number and then deducting 15% from the remainder, 1428 is left. What was the initial number?
(1) 4200 (2) 3962
(3) 4150 (4) 4300

**59.** A train travels 40% faster than a car. Both start from point A at the same time and reach point B, 140 km away at the same time. On the way the train takes 25 minutes for stopping at the stations. What is the speed (in km/hr) of the train?
(1) 67 (2) 134.4
(3) 145.9 (4) 160

**60.** A certain sum of money triples itself in 5 years at simple interest. In how many years it will be five times?
(1) 5 (2) 8
(3) 10 (4) 15

**61.** If $x + \left(\frac{1}{x}\right) = 2$, then what is the value of $x^{64} + x^{121}$?
(1) 0 (2) 1
(3) 2 (4) – 2

**62.** If $x = 6 + 2\sqrt{6}$, then what is the vlaue of $\sqrt{x-1} + \frac{1}{\sqrt{x-1}}$ ?
(1) $2\sqrt{3}$ (2) $3\sqrt{2}$
(3) $2\sqrt{2}$ (4) $3\sqrt{3}$

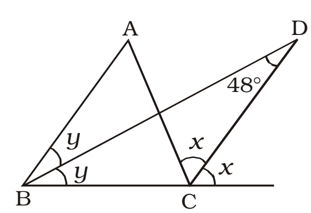
**63.** If $a + b + c = 27$, then what is the value of $(a-7)^3 + (b-9)^3 + (c-11)^3 - 3(a-7)(b-9)(c-11)$ ?
(1) 0 (2) 9
(3) 27 (4) 81

**64.** If $x = \frac{2\sqrt{15}}{\sqrt{3}+\sqrt{5}}$, then what is the value of $\frac{x+\sqrt{5}}{x-\sqrt{5}} + \frac{x+\sqrt{3}}{x-\sqrt{3}}$?
(1) $\sqrt{5}$ (2) $\sqrt{3}$
(3) $\sqrt{15}$ (4) 2

**65.** The perimeter of an isosceles triangle is 32 cm and each of the equal sides is $\frac{5}{6}$ times of the base. What is the area (in cm$^2$) of the triangle ?
(1) 39 (2) 48
(3) 57 (4) 64

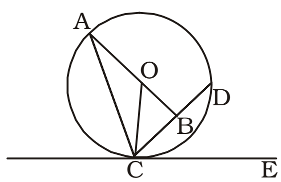
**66.** If length of each side of a rhombus PQRS is 8 cm., and $\angle PQR = 120°$, then what is the length (in cm.) of QS?
(1) $4\sqrt{5}$ (2) 6
(3) 8 (4) 12

**67.** In the given figure, ABC is a triangle. The bisectors of internal ∠B and external ∠C interest at D. If ∠BDC = 48°, then what is the vlaue (in degrees) of ∠A?




(1) 48 (2) 96
(3) 100 (4) 114

**68.** In the given figure, O is the centre of the circle and $\angle DCE = 45°$. If $CD = 10\sqrt{2}$ cm., then what is the length (in cm.) of AC.? CB = BD




(1) 14 (2) 15.5
(3) 18.5 (4) 20

**69.** What is the simplified value of

$\frac{\sin 2A}{1+\cos 2A}$ ?

(1) tan A (2) cot A
(3) sin A (4) cos A

**70.** What is the simplified value of

$\left(\frac{\sec A}{\cot A + \tan A}\right)^2$ ?

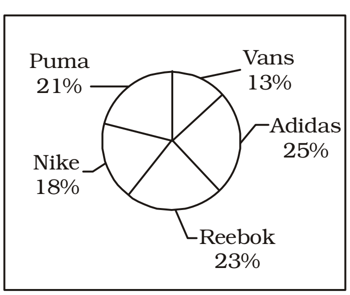
(1) $1 - \cos^2 A$ (2) $2\sin^2 A$
(3) $\sec^2 A$ (4) $\text{cosec}^2 A$

**71.** What is the simplified value of

$1 + \tan A \tan\left(\frac{A}{2}\right)$?

(1) $\sin\frac{A}{2}$ (2) cos A
(3) sec A (4) sin A

**Directions (72–75) :** The pie chart given below shows the number of shoes of 5 different brands in a multi brand store. There are total 1200 shoes.




**72.** How many shoes are there of Reebok brand?
(1) 230 (2) 276
(3) 286 (4) 216

**73.** What is the difference in number of shoes of Puma and Vans?
(1) 96 (2) 156
(3) 84 (4) 112

**74.** The difference between the number of shoes of Reebok and Nike is same as the difference between which of the following two brands?
(1) Puma and Adidas
(2) Reebok and Adidas
(3) Vans and Nike
(4) Nike and Adidas

**75.** Puma shoes are how much percent more than the Nike shoes?
(1) 14.28 (2) 16.66
(3) 25 (4) 21.33

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** No sooner did I come out of my home to go to market (1)/ when it started raining heavily (2)/ which drenched me completely. (3)/ No Error (4)

**77.** Unless you don't obey (1)/ your elders you (2)/ will not succeed in your life. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Fourteen kilometres ______ not a short distance, to reach to my office daily.
(1) are (2) has
(3) have (4) is

**79.** Good reading ______ the sense of liberal educated mind.
(1) beliefs (2) leads
(3) reflects (4) starts

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Frivolous**
(1) Captious (2) Wise
(3) Pueri le (4) Spiritual

**81. Petrify**
(1) Adorn (2) Calm
(3) Curious (4) Harden

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Gregarious**
(1) Affable (2) Genial
(3) Introvert (4) Urbane

**83. Tremulous**
(1) Feeble (2) Frugal
(3) Stable (4) Vital

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. The alpha and the omega**
(1) Happy and sad
(2) The beginning and the end
(3) The love and the hatred
(4) Truth and dare

**85. Throw up the sponge**
(1) To attack
(2) To laugh at someone
(3) To surrender
(4) To talk loudly

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** I had **(a few)** eggs in the fridge, so we need to go to the market to buy them.
(1) a little
(2) few
(3) little
(4) No im provement

**87.** My brother is indifferent **(about)** whatever I say.
(1) in
(2) of
(3) to
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. A funeral poem**
(1) Elegy
(2) Pandemonium
(3) Parody
(4) Sonnet

**89. One who walks in sleep**
(1) Drover
(2) Fastidious
(3) Numismatist
(4) Somnambulist

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Gaurantee (2) Itinerary
(3) Magnificent
(4) Writing

**91.** (1) Etiquete
(2) Exquisite
(3) Restaurant
(4) Scavenger

**Directions (92–93) :** The questions below consist of a set of labelled sentences. These sentences, when properly sequenced form a coherent paragraph. Select the most logical order of sentences from among the options.

**92.** P. But he did not know how to find one at that hour.
Q. It was his first visit to the city and he didn't know where to go.
R. Mohanlal's train was late and it reached Kolkata a little after midnight.
S. He thought he would go to a choultry where he would not have to pay rent.
(1) PSQR (2) QRSP
(3) RQSP (4) RSQP

**93.** P. And slowly, you reach the pinnacle of self-awareness, experiencing a unity with all life.
Q. If you transform your energy positively, it naturally becomes compassion and love.
R. Once you experientially are a part of everything then nobody needs to teach you morality.
S. Then you can do something to improve the situation, but without anger.
(1) PQRS (2) QPRS
(3) RQPS (4) RSPQ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**Ram was singing a beautiful song for his mother.**
(1) A beautiful song was being sung by Ram for his mother.
(2) A beautiful song was sang by Ram for his mother.
(3) A beautiful song was sung by Ram for his mother.
(4) A beautiful song was sung for his mother by Ram.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**Priya advised me not to go to school the next day.**
(1) "Don't go to school next day" Priya said to me.
(2) "Don't go to school tomorrow" Priya said to me .
(3) Priya said, "Will you not go to school tomorrow?"
(4) Priya told me that, "Don't go to school tomorrow."

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

Job performance is **(96)** by a number of factors. Motivation alone does not lead to increased performance. Ability and technology moderates the relationship between motivation and performance. The higher the levels of ability and motivation the **(97)** the level of performance will be. However, increasing motivation beyond an **(98)** level tends to **(99)** a dysfunctional result because it is **(100)** by an increased level of anxiety.

**96.** (1) affected
(2) effected
(3) influenced
(4) measured

**97.** (1) higher
(2) larger
(3) lower
(4) smaller

**98.** (1) certain
(2) desired
(3) increased
(4) optimal

**99.** (1) deduce
(2) introduce
(3) produce
(4) reduce

**100.** (1) abandoned
(2) accompanied
(3) affiliated
(4) amalgamated

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (2) | **3.** (1) | **4.** (2) |
| **5.** (4) | **6.** (1) | **7.** (2) | **8.** (1) |
| **9.** (3) | **10.** (1) | **11.** (3) | **12.** (3) |
| **13.** (1) | **14.** (1) | **15.** (2) | **16.** (2) |
| **17.** (3) | **18.** (1) | **19.** (2) | **20.** (2) |
| **21.** (1) | **22.** (1) | **23.** (1) | **24.** (2) |
| **25.** (2) | **26.** (1) | **27.** (4) | **28.** (4) |
| **29.** (1) | **30.** (3) | **31.** (3) | **32.** (3) |
| **33.** (2) | **34.** (3) | **35.** (2) | **36.** (2) |
| **37.** (2) | **38.** (1) | **39.** (3) | **40.** (2) |
| **41.** (3) | **42.** (1) | **43.** (1) | **44.** (1) |
| **45.** (4) | **46.** (2) | **47.** (3) | **48.** (2) |
| **49.** (3) | **50.** (2) | **51.** (3) | **52.** (1) |
| **53.** (1) | **54.** (3) | **55.** (2) | **56.** (2) |
| **57.** (2) | **58.** (1) | **59.** (2) | **60.** (3) |
| **61.** (3) | **62.** (1) | **63.** (1) | **64.** (4) |
| **65.** (2) | **66.** (3) | **67.** (2) | **68.** (3) |
| **69.** (1) | **70.** (1) | **71.** (3) | **72.** (2) |
| **73.** (1) | **74.** (3) | **75.** (2) | **76.** (2) |
| **77.** (1) | **78.** (4) | **79.** (3) | **80.** (3) |
| **81.** (4) | **82.** (3) | **83.** (3) | **84.** (2) |
| **85.** (3) | **86.** (2) | **87.** (3) | **88.** (1) |
| **89.** (4) | **90.** (1) | **91.** (1) | **92.** (3) |
| **93.** (2) | **94.** (1) | **95.** (2) | **96.** (1) |
| **97.** (1) | **98.** (4) | **99.** (3) | **100.** (2) |

## EXPLANATIONS

**1.** (1) Car runs on the road. Similarly, Ship runs on the water.

**2.** (2) G L O W : F J N U

G –1 → F; L –2 → J; O –1 → N; W –2 → U

Similarly,

P T E L : O R D J

P –1 → O; T –2 → R; E –1 → D; L –2 → J

**3.** (1) $(5)^3 - 1 = 125 - 1 = 124$

Similarly,

$(6)^3 - 1 = 216 - 1 = 215$

**4.** (2) Except the word–pair 'Careless–Casual', in all others the words are antonymous to each other.

**5.** (4) F ↔ U; G ↔ T

K ↔ P; L ↔ O

D ↔ W; E ↔ V

Pairs of opposite letters.

But, C W ↔ D X

**6.** (1) $(17)^2 + 1 = 289 + 1 = 290$

$(21)^2 + 1 = 441 + 1 = 442$

$(12)^2 + 1 = 144 + 1 = 145$

But, $(11)^2 - 1 = 121 - 1 = 120$

**7.** (2) Arrangement of words as per dictionary.

(3) Pastel
↓
(5) Pebble
↓
(4) Postal
↓
(1) Pragmatic
↓
(2) Protect

**8.** (1) Q P O N [M]

–1 –1 –1 –1

**9.** (3) 6 + 3 = 9

6 + 9 = 15

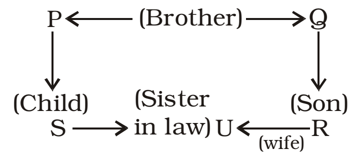
9 + 15 = 24

15 + 24 = 39

24 + 39 = 63

39 + 63 = [102]

**10.** (1) U is sister-in-law of S.




**11.** (3) Suppose present age of A $= x$ years

∴ Present age of B $= x - 9$ years

According to the question,

$(x + 3) + (x - 9 - 4) = 76$

⇒ $x + 3 + x - 13 = 76$

⇒ $2x - 10 = 76$

∴ $x = \frac{86}{2} = 43$

Present age of B $= x - 9$ years $= 43 - 9 = 34$ years

Present age of C $= \frac{34}{2}$ years $= 17$ years

Age of C after 10 years $= 17 + 10$ years $= 27$ years

**12.** (3) There is no 'A' letter in the given word. Therefore, the word BANE cannot be formed.

H [E R] R [I N] G [B] O N [E] ⇒ BINER

H E R R I [N] G B [O N E] ⇒ NONE

[H] E R R [I N G] B O N [E] ⇒ HINGE

**13.** (1)

N I G H T → O D D G M

T –5 → O; H –4 → D; G –3 → D; I –2 → G; N –1 → M

and,

D A R K → G O Y C

K –4 → G; R –3 → O; A –2 → Y; D –1 → C

Therefore,

G R E E N → I A B P F

N –5 → I; E –4 → A; E –3 → B; R –2 → P; G –1 → F

**14.** (1) $4 \times 3 - 6 \div 2 + 7 = 8$

⇒ $4 \times 3 + 6 \div 2 - 7 = 8$

⇒ $12 + 3 - 7 = 15 - 7 = 8$

**15.** (2) [# ⇒ ÷ | % ⇒ ×]

$3 \# 4 \% 8 = \frac{3}{4} \times 8 = 6$

$9 \% 4 \# 3 = 9 \times \frac{4}{3} = 12$

Therefore,

$12 \% 6 \# 24 = 12 \times \frac{6}{24} = 3$

**16.** (2) First Column

$(7 \times 2 \times 8) + 3 = 112 + 3 = 115$

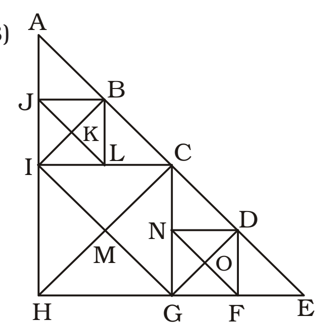
Second Column

$(6 \times 5 \times 9) + 3 = 270 + 3 = 270$

Third Column

$(3 \times 1 \times 4) + 3 = 12 + 3 = 15$

**17.** (3)




The triangles are :

ΔAJB; ΔKBJ; ΔKJI; ΔKIL; ΔKLB; ΔBJI; ΔJIL; ΔILB; ΔLBJ; ΔAIC; ΔMCI; ΔMIH; ΔMHG; ΔMGC; ΔIHG; ΔHGC; ΔGCI; ΔCIH; ΔCND; ΔNGF; ΔGFD; ΔFDN; ΔDNG; ΔODN; ΔONG; ΔOGF; ΔOFD; ΔDFE; ΔCGE; ΔBAI; ΔBIC; ΔCAH; ΔCHE; ΔDCG; ΔDGE: ΔBLC; ΔAHE

Thus, there are 37 triangles in the given figure.

**18.** (1) First Premise is Particular Affirmative (I–type).
Second Premise is Universal Negative (E–type).

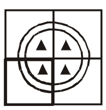
No intelligent is boy.

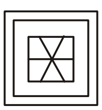
Some boys are hardworking.

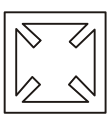
E + I ⇒ $O_1$–type of Conclusion "Some hardworking are not intelligent".
This is the Conclusion I.

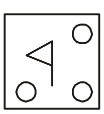
**19.** (2) The symbol %, *, ^ and + are on the faces adjacent to '$'. Therefore, & lies opposite $.

**20.** (2) Number of people who study only two subjects :
Mathematics and Physics = 5
Mathematics and Chemistry = 6
Physics and Chemistry = 12
Required sum = 5 + 6 + 12 = 23

**21.** (1) 

**22.** (1) 

**23.** (1) 

**24.** (2) 

**25.** (2) S = 01, 14, 22, 30, 43
T = 00, 13, 24, 31, 42
E = 04, 12, 21, 33, 40
A = 57, 68, 76, 89, 95
L = 59, 65, 77, 88, 96

| Option | S | T | E | A | L |
|---|---|---|---|---|---|
| (1) | 01 | 13 | 04 | 76 | 66 |
| (2) | 14 | 31 | 40 | 95 | 59 |
| (3) | 22 | 42 | 21 | 69 | 97 |
| (4) | 43 | 24 | 33 | 57 | 58 |

**26.** (1) Maintaining a buffer stock is an important constituent of the Government's food policy. The buffer stock gives the basic and most flexible instrument for moderating short-term effects of supply or production shortfalls. The concept of a buffer stock was first familiarized during the 4th Five Year Plan (1969-74).

**27.** (4) The calorie requirements for rural and urban person in India are fixed at 2400 and 2100 calories respectively.

**28.** (4) The President of India can be removed from the office for violation of the constitution by impeachment. Such a motion of impeachment can be initiated by any House of Parliament. In such a case one fourth of the members, of the house, intending to move such a motion have to serve a fourteen days notice in writing. If two-thirds of the members support the motion that it is passed for consideration of the other House. The President is allowed the opportunity to present his defence either in person or through his nominee. If the House despite the defence supports the motion by two-thirds majority the President stands impeached.

**29.** (1) Article 226 empowers the High Courts to issue writs in the nature of habeas corpus, mandamus, prohibition, certiorari and quo warranto or any of them for the enforcement of any of the fundamental rights or for any other purposeThe jurisdiction of the High Courts under Art 226 is wider than that of the Supreme Court under Art 32.

**30.** (3) Vijay Stambh, established by Maharana Kumba in Chittorgarh is a nationalistic masterwork built to remember the triumph of the kingdom over the trespasser Mohammed Khilji. Constructed between 1442 AD and 1449 AD, this 'Victory Tower' commemorate King Rana Kumbha victory over joint armies of Malwa and Gujarat which was led by Khilji.

**31.** (3) Bal Gangadhar Tilak was an Indian social reformer and freedom activist. His famous declaration "Swaraj is my birthright, and I shall have it" served as an inspiration for future revolutionaries during India's struggle for freedom. The British Government termed him as the "Father of Indian Unrest" and his followers bequeathed upon him the title of 'Lokmanya' meaning he who is revered by the people.

**32.** (3) The state of Rajasthan is the largest Indian state with an area of 3, 42,239sq.km comprising of the 11% of the total geographical area of the country. This state has a type of rhomboid shape and stretches lengthwise 869 km. from west to east and 826 km. from north to south.

**33.** (2) Gujarat occupies the northern extremity of the western sea-board of India. It has the longest coast line of 1290 kms. It comprises of three geographical regions. The peninsula, traditionally known as Saurashtra, is essentially a hilly tract sprinkled with low mountains. Kutch on the north-east is barren and rocky and contains the famous Rann (desert) of Kutch, the big Rann in the north and the little Rann in the east. The mainland extending from the Rann of Kutch and the Aravalli Hills to the river Damanganga is on the whole a level plain of alluvial soil.

**34.** (3) The axillary bud (or lateral bud) is an embryonic shoot located in the axil of a leaf. Each bud has the potential to form shoots, and may be specialized in producing either vegetative shoots (stems and

branches) or reproductive shoots (flowers).

**35.** (4) Xylem are plant vascular tissue that conveys water and dissolved minerals from the roots to the rest of the plant and also provides physical support. Xylem tissue consists of a variety of specialized, water-conducting cells known as tracheary elements.

**36.** (4) R.H. Whittaker proposed the five kingdoms of classification in 1969. This classification was based upon certain characters like mode of nutrition, thallus organization, cell structure, phylogenetic relationships and reproduction. This form of classification includes five kingdoms Monera, Protista, Fungi, Plantae and Animalia.

**37.** (2) The Newton's First Law states, "A body at rest will remain at rest, and a body in motion will remain in motion unless it is acted upon by an external force." Newton expanded on the work of Galileo to better define the relationship between energy and motion.

**38.** (1) Pyrometer is device for measuring relatively high temperatures, such as are encountered in furnaces. In the modern usage, it is a device that from a distance determines the temperature of a surface from the spectrum of the thermal radiation it emits, a process known as pyrometry and sometimes radiometry.

**39.** (3) A local area network (LAN) is a group of computers and associated devices that share a common communications line or wireless link to a server. Typically, a LAN encompasses computers and peripherals connected to a server within a distinct geographic area such as an office or a commercial establishment.

**40.** (2) The acid produced by ants is called formic acid. The name comes from the Latin word for ant, which is "formica." Chemically, it is a simple carboxylic acid. A major use of formic acid is as a preservative and antibacterial agent in livestock feed.

**41.** (3) A sol is a type of colloid in which solid particles are suspended in a liquid. The particles in a sol are very small. The colloidal solution displays the Tyndall effect and is stable. Examples include Gemstones, Pearls, and some Coloured Glass.

**42.** (1) Itai-itai disease first occurred in 1912 within Toyama Prefecture. The cause of itai-itai disease was determined to be cadmium poisoning in the drinking water from the Jinzu River basin. The source of cadmium was discovered to be from Mitsui Mining and Smelting Company.

**43.** (1) Under the new reservation scheme called 'Vikalp', or alternate train accommodation scheme (ATAS), passengers who have booked tickets in other mail or express trains, can avail the option of travelling in premium trains to their booked destinations with no extra cost. The scheme aims to utilise vacant berths in many premier trains including Rajdhani, Shatabdi, Duronto and other special service such as Suvidha trains in all major routes.

**44.** (1) Cholera is an infection of the small intestine by some strains of the bacterium Vibrio cholerae. Filippo Pacini was an Italian anatomist, posthumously famous for isolating the cholera bacterium Vibrio cholerae.

**45.** (4) Player-Sport
- Mithali Raj-Cricket
- Poonam Rani-Hockey
- Lalita Babar-3000m Steeple-chases

**46.** (2) "Hunar Haat", a spectacular platform of Ministry of Minority Affairs where exquisite pieces of Handicraft & Handloom prepared by inmates of Tihar Jail and master artisans from across the country are displayed, was inaugurated at India International Trade Fair at Pragati Maidan.

**47.** (3) Moonlight became the first film with an all-black cast, the first LGBT film, and the second lowest-grossing film domestically to win the Oscar for Best Picture in 2017. The film's editor, Joi McMillon, became the first black woman to be nominated for an editing Oscar and Ali became the first Muslim to win an acting Oscar.

**48.** (2) The book 'Citizen and Society' is written by former Vice President Mohd Hamid Ansari. This volume is a collection of lectures on diverse themes such as polity, security and empowerment.

**49.** (3) Cabinet approved MoU between India and Israel on National Campaign for Water Conservation in India in June 2017. As part of the MoU, the governments intend to achieve several objectives such as putting water conservation on the national agenda in India, encouraging each citizen to save water in everyday life, promoting its re-use, recharge and recycling.

**50.** (2) Afghanistan's opium poppy production goes into more than 90% of heroin worldwide. Afghanistan's area under opium-poppy cultivation has increased 63% since 2016 while its potential opium production increased 87% both records for the country despite years of anti-narcotics efforts. Opium produced in Afghanistan is typically exported in its raw form, or as heroin or morphine.

**51.** (3) LCM of 5 and 7 = 35
Numbers between 300 to 600 which are divisible by 35 are : 315, 350, ..... 630
$a_n = a + (n-1)\,d$
$\Rightarrow 630 = 315 + (n-1)\,35$
$\Rightarrow (n-1) \times 35 = 630 - 315$
$= 315$

$\Rightarrow n = \frac{315}{35} + 1 = 9 + 1 = 10$

**52.** (1) Ratio of 1 day's work of Raman, Jatin and Sachin

$= \frac{1}{5} : \frac{1}{7} : \frac{1}{9} = 63 : 45 : 35$

Sum of the terms of ratio
= 63 + 45 + 35 = 143
Raman's share

$= \frac{63}{143} \times 2860$

$= \frac{63}{143} \times 2860 =$ Rs. 1260

**53.** (1) Radius of sphere $= \frac{14}{2}$ cm.

= 7 cm.
Surface area of sphere = $4\pi R^2$

$= 4 \times \frac{22}{7} \times 7^2 = 616\text{ cm}^2$

**54.** (3) Marked price of article
= Rs. $x$
According to the question,
65% of 80% of $x$ = 50700

$\Rightarrow x \times \frac{80}{100} \times \frac{65}{100} = 50700$

$\Rightarrow x = \frac{50700 \times 100 \times 100}{80 \times 65}$

= Rs. 97500

**55.** (2) A : B : C = 3 : 5 : 8
Sum of the terms of ratio
= 3 + 5 + 8 = 16

B's share $= \frac{5}{16} \times 3200$

= Rs. 1000

C's share $= \frac{8}{16} \times 3200$

= Rs. 1600
Difference
= Rs. (1600 – 1000) = Rs. 600

OR

Required difference

$=$ Rs. $\left(\frac{8-5}{16} \times 3200\right)$

= 3 × 200 = Rs. 600

**56.** (2) Total present age of 5 members = 5 × 24 = Rs. 120 years
∴ Average age of the 4–member family at the time of birth of the youngest member

$= \frac{120 - 40}{4} = \frac{80}{4} = 20$ years

**57.** (2) Let the C.P. of pen be Rs. $x$.
∴ Number of pens bought for

Rs. $100 = \frac{100}{x}$

New price of pen = 80% of $x$

$= \frac{80x}{100} =$ Rs. $\frac{8x}{10}$

Number of pens bought for Rs.

$100 = \frac{100}{\frac{8x}{10}} = \frac{1000}{8x}$

According to the question,

$\frac{100}{x} + 10 = \frac{1000}{8x}$

$\Rightarrow \frac{1000}{8x} - \frac{100}{x} = 10$

$\Rightarrow \frac{1000 - 800}{8x} = 10$

$\Rightarrow \frac{200}{8x} = 10$

$\Rightarrow x = \frac{200}{80} = \frac{5}{2}$

$= \frac{8}{10} \times \frac{5}{2} =$ Rs. 2

**58.** (1) Original number

$= 1428 \times \frac{100}{100 - 60} \times \frac{100}{100 - 15}$

$= 1428 \times \frac{100}{40} \times \frac{100}{85} = 4200$

**59.** (2) Let the speed of car be $x$ km/hr.
Speed of train = 140% of $x$

$= \frac{x \times 140}{100} = \frac{14x}{10}$ km/hr.

According to the question,

$\frac{140}{\frac{14x}{10}} + \frac{25}{60} = \frac{140}{x}$

$\Rightarrow \frac{100}{x} + \frac{25}{60} = \frac{140}{x}$

$\Rightarrow \frac{140}{x} - \frac{100}{x} = \frac{5}{12}$

$\Rightarrow \frac{40}{x} = \frac{5}{12}$

$\Rightarrow x = \frac{12 \times 40}{5} = 96$

∴ Speed of train

$= \left(\frac{96 \times 14}{10}\right)$ kmph.

= 134.4 km/hr

**60.** (3) Let principal be Rs. P
Interest = 2P – P = Rs. 2P

Rate $= \frac{\text{S.I.} \times 100}{\text{T} \times \text{P}}$

$= \frac{2\text{P} \times 100}{5 \times \text{P}} = 40\%$

Again, S.I. = 5P – P = Rs. 4P

Time $= \frac{\text{S.I.} \times 100}{\text{R} \times \text{P}}$

$= \frac{4\text{P} \times 100}{40 \times \text{P}} = 10$ years

OR

In 5 years,

$\frac{\text{S.I.}}{\text{Principal}} = 2$

∴ In 10 years,

$\frac{\text{S.I.}}{\text{Principal}} = 4$

**61.** (3) $x + \frac{1}{x} = 2$

$\Rightarrow x^2 - 2x + 1 = 0$

$\Rightarrow (x-1)^2 = 0 \Rightarrow x = 1$

$\therefore x^{64} + x^{121}$

$= (1)^{64} + (1)^{121} = 1 + 1 = 2$

**62.** (1) $\sqrt{x-1} + \frac{1}{\sqrt{x-1}}$

$= \frac{x-1+1}{\sqrt{x-1}} = \frac{x}{\sqrt{x-1}}$

$= \frac{6+2\sqrt{6}}{\sqrt{6+2\sqrt{6}-1}} = \frac{6+2\sqrt{6}}{\sqrt{5+2\sqrt{6}}}$

$= \frac{6+2\sqrt{6}}{\sqrt{(\sqrt{3})^2 + (\sqrt{2})^2 + 2\times\sqrt{3}\times\sqrt{2}}}$

$= \frac{6+2\sqrt{6}}{\sqrt{(\sqrt{3}+\sqrt{2})^2}}$

$= \frac{6+2\sqrt{6}}{\sqrt{3}+\sqrt{2}} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$

$= \frac{6\sqrt{3}-6\sqrt{2}+6\sqrt{2}-4\sqrt{3}}{(\sqrt{3})^2-(\sqrt{2})^2}$

$= \frac{2\sqrt{3}}{3-2} = 2\sqrt{3}$

**63.** (1) $a + b + c = 27$

$\Rightarrow a + b + c = 7 + 9 + 11$

$\Rightarrow (a-7) + (b-9) + (c-11) = 0$

If $x + y + z = 0$, then

$x^3 + y^3 + z^3 - 3xyz = 0$

$\therefore (a-7)^3 + (b-9)^3 + (c-11)^3 - 3(a-7)(b-9)(c-11) = 0$

**64.** (4) $x = \frac{2\sqrt{15}}{\sqrt{3}+\sqrt{5}} = \frac{2\times\sqrt{5}\times\sqrt{3}}{\sqrt{3}+\sqrt{5}}$

$\frac{x}{\sqrt{5}} = \frac{2\sqrt{3}}{\sqrt{3}+\sqrt{5}}$

By componendo and dividendo,

$\frac{x+\sqrt{5}}{x-\sqrt{5}} = \frac{2\sqrt{3}+\sqrt{3}+\sqrt{5}}{2\sqrt{3}-\sqrt{3}-\sqrt{5}}$

$= \frac{3\sqrt{3}+\sqrt{5}}{\sqrt{3}-\sqrt{5}}$ ...(i)

Again,

$x = \frac{2\times\sqrt{5}\times\sqrt{3}}{\sqrt{3}+\sqrt{5}}$

$\Rightarrow \frac{x}{\sqrt{3}} = \frac{2\sqrt{5}}{\sqrt{3}+\sqrt{5}}$

By componendo and dividendo,

$\frac{x+\sqrt{3}}{x-\sqrt{3}} = \frac{2\sqrt{5}+\sqrt{3}+\sqrt{5}}{2\sqrt{5}-\sqrt{3}-\sqrt{5}}$

$= \frac{3\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$ ...(ii)

Adding equations (i) and (ii),

$\frac{x+\sqrt{5}}{x-\sqrt{5}} + \frac{x+\sqrt{3}}{x-\sqrt{3}}$

$= \frac{3\sqrt{3}+\sqrt{5}}{\sqrt{3}-\sqrt{5}} + \frac{3\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$

$\frac{3\sqrt{3}+\sqrt{5}}{\sqrt{3}-\sqrt{5}} - \frac{3\sqrt{5}+\sqrt{3}}{\sqrt{3}-\sqrt{5}}$

$= \frac{3\sqrt{3}+\sqrt{5}-3\sqrt{5}-\sqrt{3}}{(\sqrt{3}-\sqrt{5})}$

$= \frac{2(\sqrt{3}-\sqrt{5})}{(\sqrt{3}-\sqrt{5})} = 2$

**65.** (2) The base of triangle be $x$ cm.

$\therefore$ Each equal side $= \frac{5x}{6}$ cm.

$\therefore x + \frac{5x}{6} + \frac{5x}{6} = 32$

$\Rightarrow 6x + 5x + 5x = 32 \times 6$

$\Rightarrow 16x = 32 \times 6$

$\Rightarrow x = \frac{32\times 6}{16} = 12$

So, sides of triangle are 12 cm, 10 cm and 10 cm.

$\therefore$ Semi–perimeter (&)

$= \frac{32}{2} = 16$

Area of triangle

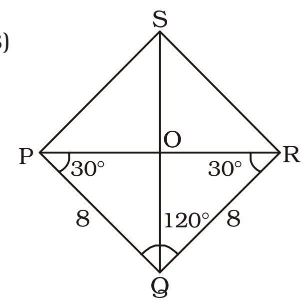
$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{16\times(16-10)(16-10)(16-12)}$

$= \sqrt{16\times 6\times 6\times 4}$

$= 4 \times 6 \times 2 = 48$ sq. cm.

**66.** (3)




In $\Delta$OQR

$\sin 30° = \frac{OQ}{QR}$

$[\because \angle OQR = \angle OQP = 60°]$

$\Rightarrow \frac{1}{2} = \frac{OQ}{8}$

$\Rightarrow$ OQ = 4 cm.

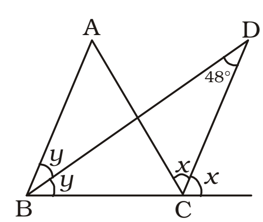
$\Rightarrow$ QS = 2 × OQ = 2 × 4 = 8 cm.

**67.** (2) In $\Delta$BDC

$48° + y = x$

$\Rightarrow x - y = 48°$ ...(i)

[$\because$ Exterior angle = sum of two other interior angles]




In $\Delta$ABC,

$2y + \angle A = 2x$

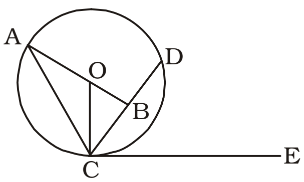
$\Rightarrow 2x - 2y = \angle A$

$\Rightarrow x - y = \frac{\angle A}{2} = 48°$

[From equation (i)]

$\Rightarrow \angle A = 48° \times 2 = 96°$

**68.** (3)




O is the centre of circle.

$CB = BD = 5\sqrt{2}$ cm.

$\therefore$ OB ⊥ CD; OC ⊥ CE

$\angle DCE = 45°$

$\therefore \angle OCB = 45° = \angle COB$

$\therefore OB = BC = 5\sqrt{2}$ cm.

$\therefore OC = \sqrt{OB^2 + BC^2}$

$= \sqrt{2\,BC^2} = \sqrt{2}$ BC

$= \sqrt{2} \times 5\sqrt{2} = 10$ cm.

$\therefore AB = OA + OB = 10 + 5\sqrt{2}$

$= 10 + 5 \times 1.4 = 17$ cm.

In $\Delta ABC$,

$AC = \sqrt{AB^2 + BC^2}$

$= \sqrt{17^2 + (5\sqrt{2})^2}$

$= \sqrt{289 + 50}$

$= \sqrt{339} \approx 18.5$ cm.

**69.** (1) $\frac{\sin 2A}{1 + \cos 2A}$

$= \frac{2 \sin A \cos A}{2\cos^2 A}$

$= \frac{\sin A}{\cos A} = \tan A$

**70.** (1) $\left(\frac{\sec A}{\cot A + \tan A}\right)^2$

$\left(\frac{\frac{1}{\cos A}}{\frac{\cos A}{\sin A} + \frac{\sin A}{\cos A}}\right)$

$= \left(\frac{\frac{1}{\cos A}}{\frac{\cos^2 A + \sin^2 A}{\sin A \cos A}}\right)^2$

$= \left(\frac{1}{\cos A} \times \frac{\sin A \cos A}{1}\right)^2$

$= \sin^2 A = 1 - \cos^2 A$

**71.** (3) $1 + \tan A \tan \frac{A}{2}$

$= 1 + \frac{2\tan^2 \frac{A}{2}}{1 - \tan^2 \frac{A}{2}}$

$\left[\because \tan A = \frac{2\tan \frac{A}{2}}{1 - \tan^2 \frac{A}{2}}\right]$

$= \frac{1 - \tan^2 \frac{A}{2} + 2\tan^2 \frac{A}{2}}{1 - \tan^2 \frac{A}{2}}$

$= \frac{1 + \tan^2 \frac{A}{2}}{1 - \tan^2 \frac{A}{2}} = \frac{1}{\cos A} = \sec A$

OR

when A = 60; $\frac{A}{2} = 30°$

$\therefore 1 + \tan A \,.\, \tan \frac{A}{2}$

$= 1 + \tan 60° \,.\, \tan 30°$

$= 1 + \sqrt{3} \times \frac{1}{\sqrt{3}} = 2$

From option,

secA = sec 60° = 2

**72.** (2) Number of shoes of Reebok brand = 23% of 1200

$= \frac{1200 \times 23}{100} = 276$

**73.** (1) Number of shoes of Puma = 21% of 1200

$= \frac{1200 \times 21}{100} = 252$

Number of shoes of Vans

$= \frac{1200 \times 13}{100} = 156$

Difference = 252 – 156 = 96

**74.** (3) Difference :

Reebok and Nike ⇒ (23 – 18)% of 1200

$= \frac{1200 \times 5}{100} = 60$

Vans and Nike ⇒ (18 – 13)% of 1200

$= \frac{1200 \times 5}{100} = 60$

**75.** (2) Number of shoes of Puma = 21% of 1200

$= \frac{1200 \times 21}{100} = 252$

Number of shoes of Nyke = 18% of 1200

$= \frac{1200 \times 18}{100} = 216$

Required per cent

$= \frac{252 - 216}{216} \times 100 = 16.66\%$

**76.** (2) No sooner...than is the correct form of correlative conjunction.

**Look at the sentence :**

No sooner did I reach the station than the train left the station.

So, correct expression ⇒ than it started...

**77.** (1) unless ⇒ if not

It means 'not' is already given in 'unless'.

The part which contains 'unless', will not have 'not' in it.

So, correct formation is — unless you obey your...

**78.** (4) fourteen kilometres is treated as one whole unit/set.

We are not referring to each kilometre of those 14 kilometres separately.

The idea of 14 km is one whole, long distance. So, we use 'is'

**79.** (3) **Reflect (Verb)** = represent in an appropriate way.

**Start (Verb)** = begin; set in.

**Lead (Verb)** = guide; conduct; show.

**Beliefs (Noun)** = opinions; views; points of view.

**80.** (3) **Frivolous/puerile (Adjective)** = glib; light-hearted; sportive; superficial frivolous ribbons and lacy frills.

**Wise (Adjective)** = intelligent; learned.

**Spiritual (Adjective)** = mystic; transcendental; unworldly.

**Captious (Adjective)** = critical; fault-finding.

**81.** (4) **Petrify/harden (Verb)** = ossify; fossilize the petrified remains of prehistoric animals.

**Adorn (Verb)** = decorate; embellish.

**Calm (Verb)** = quieten; sooth; pacify.

**Curious (Adjective)** = eager; inquisitive.

**82.** (3) **Gregarious (Adjective)** = sociable, social.

**Look at the sentence :**

A gregarious man.

**Introvert (Noun)** = a shy, reticent person.

**Look at the sentence :**

He is an introvert.

**Affable/genial (Adjective)** = friendly; amiable.

**Urbane (Adjective)** = worldly; elegant; cultured.

**83.** (3) **Tremulous (Adjective)** = unsteady; shaky.

**Look at the sentence :**

Barbara's voice was tremulous.

**Stable (Adjective)** = firm; solid; steady.

**Look at the sentence :**

These dinghies are stable.

**Feeble (Adjective)** = weak; frail; infirm.

**Frugal (Adjective)** = thrifty; sparing; economical.

**Vital (Adjective)** = important; crucial.

**84.** (2) The begining and the end

**Look at the sentence :**

"I am the Alpha and the Omega" said the lord.

**85.** (3) **to surrender**

**Look at the sentence :**

The enemy threw up the sponge when our army surrounded him from all sides.

**86.** (2) **Few (determiner)** = hardly any; scarcely any.

**Look at the sentence :**

I have few friends in this new locality.

**a few (determiner)** = a small number of things/persons.

**Look at the sentence :**

There are a few oranges in the basket.

**87.** (3) 'indifferent' is followed by preposition 'to' such as

The police are indifferent to crime.

**Indifferent (Adjective)** = unconcerned about; apathetic.

**88.** (1) **Pandemonium (Noun)** = wild and noisy disorder.

**Parody (Noun)** = satire; mockery.

**Sonnet (Noun)** = a poem of fourteen lines.

**89.** (4) **Drover (Noun)** = a person who moves livestock.

**Fastidious (Adjective)** = painstaking; meticulous.

**Numismatist (Noun)** = a collector of coins.

**90.** (1) Correct spelling is : guarantee

**91.** (1) Correct spelling is : etiquette

**94.** (1) A beautiful song was being sung by Ram for his mother.

It is active voice of past continuous tense.

Its passive voice is formed as follows :

Subject + was being/were being + $V_3$ + by + object...

**95.** (2) "Don't go to school tomorrow" Priya said to me.

It is indirect speech of an imperative sentence.

Take care of the following points while changing to direct speech :

⇒ 'advised' changes to 'said to'

⇒ 'not to' changes to don't

⇒ the next day, changes to tomorrow

**96.** (1) **Affect (Verb)** = make a difference to.

**Influence (Verb)** = have an effect on.

**Measure (Verb)** = ascertain; assess.

**Effect (Verb)** = accomplish

**Remember :**

performance ⇒ effected

thinking ⇒ influenced

work ⇒ effected

size/amount ⇒ measured

**97.** (1) Higher level of motivation leads to higher level of performance.

**Larger** = in terms of size; extent or capacity.

**98.** (4) **Optimal (Adjective)** = optimum; best or most favourable.

**Look at the sentence :**

Seeking the optimal solution.

**99.** (3) **Produce (Verb)** = create or form a process.

**Deduce (Verb)** = conclude

**Reduce (Verb)** = minimize

**100.** (2) **Accompany (Verb)** = be present or occur at the same time as something else.

In passive formation, 'accompany' is often followed by 'by'. home-cooked ham accompanied by brown bread.

❑❑❑

# SET 6

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 08.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Goiter : Iodine : : Anaemia : ?
(1) Vitamin D
(2) Iron
(3) Vitamin E
(4) Calcium

**2.** In the following question, select the related letter from the given alternatives :
DE : O : : AF : ?
(1) H (2) K
(3) J (4) I

**3.** In the following question, select the related number from the given alternatives :
56 : 41 : : 94 : ?
(1) 49 (2) 53
(3) 60 (4) 89

**4.** In the following question, select the odd word from the given alternatives :
(1) Beneath (2) On top
(3) Huge (4) Above

**5.** In the following question, select the odd letters from the given alternatives :
(1) MN (2) NM
(3) OL (4) ET

**6.** In the following question, select the odd number from the given alternatives :
(1) 253 (2) 473
(3) 143 (4) 633

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Flinching 2. Flintlock
3. Flinpites 4. Flintlocks
5. Flinchers
(1) 15243 (2) 51243
(3) 51324 (4) 51342

**8.** In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
_ *yzaa* _ *y* _ *xy* _ *aazy* _
(1) *xxzzx* (2) *xxaza*
(3) *xzxzx* (4) *aazzx*

**9.** In the following question, select the missing number from the given alternatives :
19, 38, ?, 228, 684, 1368
(1) 108 (2) 113
(3) 114 (4) 138

**10.** There are five students – P, Q, R, S and T having different heights in a class. P's height is more than only one student. Q's height is more than S and P but not more than R. S's height is more than P. R is not the smallest. Who is having the maximum height in the class?
(1) Q (2) R
(3) S (4) T

**11.** In a row of 74 girls, Shweta is 27th from left end. Palak is 7th to the right of Shweta. What is Palak's position from the right end of the row?
(1) 40 (2) 41
(3) 42 (4) 44

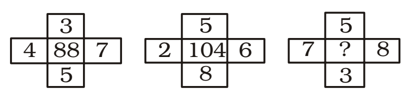
**12.** In the following question, from the given alternative words, select the word which can be formed using the letters of the given word :
**CAPITULATE**
(1) CAPABLE
(2) LUPIN
(3) PITTY
(4) TALE

**13.** In a certain code language, "BIOLOGY" is written as "YRLOLTB". How is "PHYSICS" written in that code language?
(1) KSXRBHH
(2) KSBHRXH
(3) XHRHBSK
(4) KSBHXRH

**14.** In the following question, correct the equation by interchanging two signs :
6 + 8 ÷ 4 – 4 = 8
(1) ÷ and = (2) ÷ and +
(3) ÷ and – (4) + and –

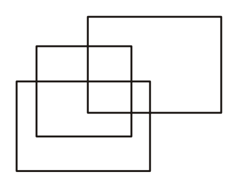
**15.** If 4 × 9 × 3 = 4 and 5 × 3 × 1 = 3, then
9 × 9 × 7 = ?
(1) 5 (2) 6
(3) 7 (4) 9

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.




(1) 108 (2) 112
(3) 118 (4) 120

**17.** How many rectangles are there in the given figure ?



(1) 9 (2) 10
(3) 11 (4) 12

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

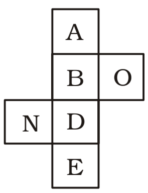
**Statements :**
I. All cups are plates.
II. Some plates are glasses.

**Conclusions :**
I. Some glasses are cups.
II. All glasses are cups.

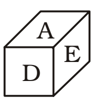
(1) Only Conclusion I follows.
(2) Only Conclusion II follows.
(3) Neither Conclusion I nor Conclusion II follows.
(4) Both Conclusions follow.

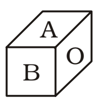
**19.** From the given options, which figure can be formed by folding the figure given in the question ?

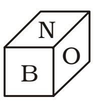
**Question Figure :**

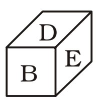



**Answer Figures :**

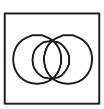
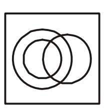
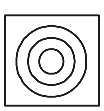
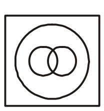
(1) 

(2) 

(3) 

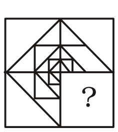
(4) 


**20.** Identify the diagram that best represents the relationship among the given classes.
Complex number, Integer, Natural number

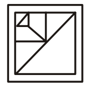
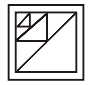
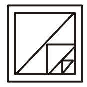
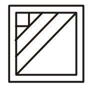
(1) 
(2) 
(3) 
(4) 

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

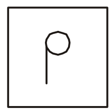



**Answer Figures :**

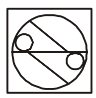
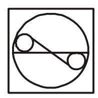
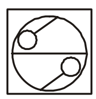
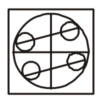
(1) 
(2) 
(3) 
(4) 

**22.** From the given answer figures, select the one in which the question figures is hidden/embedded.

**Question Figure :**

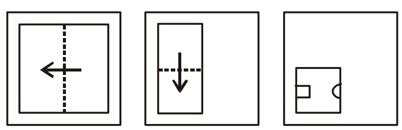


**Answer Figures :**

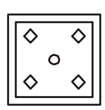
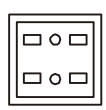
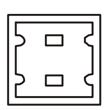
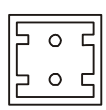
(1) 
(2) 
(3) 
(4) 

**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

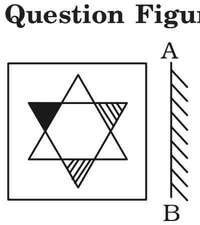


**Answer Figures :**

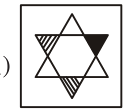
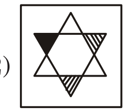
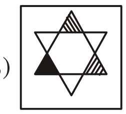
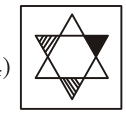
(1) 
(2) 
(3) 
(4) 

**24.** If a mirror is placed on the line AB, then which of the answer figures is the right imagen of the given figure ?

**Question Figure :**




**Answer Figures :**

(1) 
(2) 
(3) 
(4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'H' can be represented by 34, 41 etc and 'T' can be represented by 59, 97 etc. Similarly, you have to identify the set for the word **'STRAW'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | S | R | G | H | W |
| 1 | H | W | S | R | G |
| 2 | R | G | H | W | S |
| 3 | W | S | R | G | H |
| 4 | G | H | W | S | R |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | A | F | L | C | T |
| 6 | C | T | A | F | L |
| 7 | F | L | C | T | A |
| 8 | T | A | F | L | C |
| 9 | L | C | T | A | F |

(1) 00, 78, 13, 67, 23
(2) 12, 59, 01, 55, 10
(3) 24, 97, 20, 86, 31
(4) 43, 66, 44, 98, 43

## GENERAL AWARENESS

**26.** 'Neo-Malthusian Theory' is associated with which of the following?
(1) Employment
(2) Poverty
(3) Resource scarcity
(4) Income

**27.** Math the following :

| | Sector | | Example |
|---|---|---|---|
| 1. | Primary | a. | Consultancy |
| 2. | Secondary | b. | Apiculture |
| 3. | Tertiary | c. | Shoe Factory |

(1) 1-b, 2- c, 3-a
(2) 1-c, 2-a, 3-b
(3) 1-a, 2-c, 3-b
(4) 1-c, 2-b, 3-a

**28.** How many Fundamental Duties are mentioned in Indian constitution?
(1) Five (2) Seven
(3) Nine (4) Eleven

**29.** Part IV of constitution of India deals with which of the following?
(1) The Union
(2) The States
(3) Fundamental Rights
(4) Directive Principles of State Policy

**30.** Who gave the slogan 'Back to the Vedas (Vedo ki aur lauto)'?
(1) Guru Nanank Dev Ji
(2) Dayanand Saraswati
(3) Swami Vivekananda
(4) Raja Ram Mohan Roy

**31.** Todarmal was the famous revenue minister of which Mughal Emperor?
(1) Shah Jahan
(2) Bahadur Shah Jafar
(3) Akbar
(4) Aurangzeb

**32.** Gravitational force is maximum at which of the following place?
(1) At equator
(2) At tropic of cancer
(3) At tropic of Capricorn
(4) At poles

**33.** Which of the following device is used to measure humidity?
(1) Hydrometer
(2) Hygrometer
(3) Psycho Meter
(4) Anemometer

**34.** Which of the following disease is caused by female Anopheles mosquito?
(1) Chicken Pox
(2) Malaria
(3) Black Fever
(4) Cholera

**35.** Which part of the plant gives us saffron?
(1) Roots (2) Petals
(3) Stem (4) Stigma

**36.** Which of the following transports water from the roots of the plant to its leaves?
(1) Xylem
(2) Phloem
(3) Both xylem and phloem
(4) Cortex

**37.** Which of the following is not a vector quantity?
(1) Momentum
(2) Displacement
(3) Torque
(4) Speed

**38.** At what temperature (in Fahrenheit) pure water freezes?
(1) 32 (2) 0
(3) 48 (4) 37

**39.** In which graphics, digital photos and scanned images are typically stored with extensions such as.bmp, .png, .jpg, .tif or gif?
(1) Bitmap
(2) Pixels
(3) Plane
(4) Both Bitmap and Pixels

**40.** Process of gaining electrons is known as _____.
(1) oxidation
(2) reduction
(3) radiation
(4) both oxidation and reduction

**41.** Which of the following metal (shown by its symbol) is generally used for making filaments of bulb?
(1) Fe (2) An
(3) Ag (4) W

**42.** Which of the following trees shed their leaves once in a year?
(1) Deciduous trees
(2) Coniferous trees
(3) Evergreen trees
(4) Both deciduous and coniferous trees

**43.** The Entrepreneurship Development Scheme (EDS) has been launched under New Economy Development Policy (NEDP) on January 19, 2017 at _____.
(1) New Delhi
(2) Mizoram
(3) Gujarat
(4) Uttar Pradesh

**44.** Who invented Dynamite?
(1) J B Dunlop
(2) Alfred Nobel
(3) James Simons
(4) Peter Hargreaves

**45.** 'Rovers cup' is associated with which of the following sport?
(1) Football (2) Hockey
(3) Golf (4) Basketball

**46.** Dandia is a form of dance associated with which of the following state?
(1) Haryana (2) Punjab
(3) Gujarat (4) Rajasthan

**47.** Who among the following was awarded with Dhronacharya Award 2016 in the field of 'Swimming (Lifetime)'?
(1) Shri Raj Kumar Sharma
(2) Shri Sagar Mal Dhayal
(3) Shri S. Pradeep Kumar
(4) Shri Nagapuri Ramesh

**48.** 'Ace Against Odds' is an autobiography of which sports person?
(1) Vishwanathan Anand
(2) Sania Mirza
(3) Abhinav Bindra
(4) Anjali Bhagwat

**49.** Under the framework of the new partnership with which country, Victory University will help India to Establish a National Sports University?
(1) Portugal (2) Australia
(3) Vietnam (4) USA

**50.** With which country India exchanged its border maps?
(1) China (2) Sri Lanka
(3) Pakistan (4) Bangladesh

## QUANTITATIVE APTITUDE

**51.** What least value which should be added to 1812 to make it divisible by 7, 11 and 14?
(1) 12 (2) 36
(3) 72 (4) 154

**52.** A is 1.5 times efficient than B therefore takes 8 days less than B to complete a work. If A and B work on alternate days and A works on first day, then in how many days the work will be completed?
(1) 17 (2) 19
(3) 19.5 (4) 21

**53.** One of the diagonals of a rhombus is 70% of the other diagonal. What is the ratio of area of rhombus to the square of the length of the larger diagonal?
(1) 3 : 10 (2) 3 : 20
(3) 7 : 20 (4) 7 : 10

**54.** A shopkeeper sells a table at a discount of 20% and earns a profit of 60%. If he sells the same table at 40% discount, then what will be his new profit per cent?
(1) 20 (2) 30
(3) 35 (4) 40

**55.** If $\frac{A}{3}=\frac{B}{2}=\frac{C}{5}$, then what is the value of ratio $(C + A)^2 : (A + B)^2 : (B + C)^2$?
(1) 9 : 4 : 25
(2) 25 : 4 : 9
(3) 64 : 25 : 49
(4) 49 : 25 : 64

**56.** 5 years ago the average age of a family which includes father, mother and a son was 35 years. 3 years ago the average age of father and mother was 46 years. What is the present age (in years) of the son?
(1) 20 (2) 24
(3) 26 (4) 22

**57.** The cost price of 60 articles is same as the selling price of $x$ articles. If there is a profit of 20%, what is the value of $x$?
(1) 15 (2) 30
(3) 50 (4) 80

**58.** A person scores 45% of the total marks in the exam and still fails by 40 marks. The passing percentage of the exam is 55%. What is the maximum marks of the exam?
(1) 300 (2) 350
(3) 400 (4) 500

**59.** A man starts running from point P at 11 : 00 a.m. with a speed of 10 km/hr. He runs for 2 hours and then takes a 1 hour rest. He continues this till he is caught by another man who starts at 2 : 00 p.m. from point P and runs non-stop at a speed of 15 km/hr towards the first man. At what time (in p.m.) will the first man be caught?
(1) 6 : 20 (2) 4 : 40
(3) 6 : 00 (4) 5 : 30

**60.** The difference of compound interest and simple interest for 3 years and for 2 years are in ratio 23 : 7 respectively. What is rate of interest per annum (in %)?
(1) $\frac{200}{7}$ (2) $\frac{100}{7}$
(3) $\frac{300}{7}$ (4) $\frac{400}{7}$

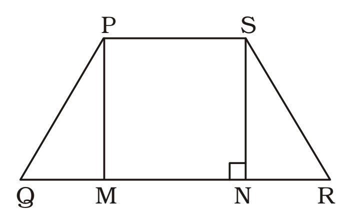
**61.** If $\left(\frac{x^2}{yz}\right)+\left(\frac{y^2}{zx}\right)+\left(\frac{z^2}{xy}\right) = 3$, then what is the value of $(x + y + z)^3$?
(1) 0 (2) 1
(3) 2 (4) 3

**62.** If $x^{\frac{1}{4}} + x^{\frac{-1}{4}} = 2$, then what is the value of $x^{81}+\left(\frac{1}{x^{81}}\right)$?
(1) –2 (2) 0
(3) 1 (4) 2

**63.** If $a (a + b + c) = 45$, $b (a + b + c) = 75$ and $c (a + b + c) = 105$, then what is the value of $(a^2 + b^2 + c^2)$?
(1) 75 (2) 83
(3) 217 (4) 225

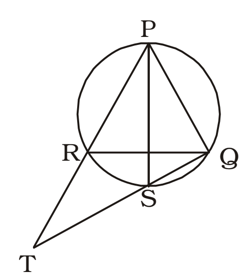
**64.** If $x^2+\left(\frac{1}{x^2}\right) = 1$, then what is the value of $x^{48} + x^{42} + x^{36} + x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1$?
(1) –9 (2) 0
(3) 1 (4) 9

**65.** In the given figure, PQRS is a trapezium in which PM||SN, NR = 9 cm, PS = 12 cm, QM = NR and NR = SN. What is the area (in cm²) of trapezium?




(1) 170 (2) 182
(3) 189 (4) 191

**66.** In the given figure, PQR is a equilateral triangle and PS is the angle bisector of ∠P. What is the value of RT : RQ ?



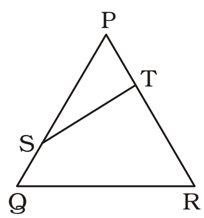

(1) 1 : 2 (2) 1 : 1
(3) 2 : 1 (4) 1 : 3

**67.** Two chords of length 20 cm and 24 cm are drawn perpendicular to each other in a circle of radius 15 cm. What is the distance between the points of intersection of these chords (in cm) from the centre of the circle?

(1) $\sqrt{114}$ (2) $\sqrt{182}$

(3) $\sqrt{206}$ (4) $\sqrt{218}$

**68.** In the given figure, QRTS is a cyclic quadrilateral. If PT = 5 cm, SQ = 4cm, PS = 6 cm and ∠PQR = 63°, then what is the value (in cm) of TR?




(1) 3 (2) 7

(3) 9 (4) 15

**69.** What is the simplified value of

$$\sin^2(90-\theta) - \left[\frac{\{\sin(90-\theta)\sin\theta\}}{\tan\theta}\right]?$$

(1) 1 (2) cosec θ

(3) 0 (4) cos θ

**70.** What is the simplified value of

$$\left[\frac{\cos^2\theta}{1+\sin\theta} - \frac{\sin^2\theta}{1+\cos\theta}\right]^2?$$

(1) sin θ

(2) 1 – sin 2θ

(3) 1 + sin 2θ

(4) 1 – sinθ

**71.** If 5 secθ – 3 tanθ = 5, then what is the value of 5 tanθ – 3 secθ?

(1) 1 (2) 2

(3) 3 (4) 4

**Directions (72–75) :** The table below shows the distribution of number of people living in 8 different countries and the per capita income of each of the countries. The total population of these countries taken together is 200 crores.

Per capita income = total GDP of country/population of the country.

| Country | Distribution of number people | Per capita income (in crore dollars) |
|---|---|---|
| 1 | 12% | 11850 |
| 2 | 24% | 5350 |
| 3 | 15% | 9900 |
| 4 | 17% | 4840 |
| 5 | 7% | 2260 |
| 6 | 6% | 6920 |
| 7 | 11% | 3190 |
| 8 | 8% | 10410 |

**72.** What is the difference (in crores) between population of the most and the least populated country?

(1) 18 (2) 32

(3) 34 (4) 36

**73.** What is the total GDP (in crore dollars) of country 5?

(1) 27120 (2) 31640

(3) 38280 (4) 44660

**74.** What is the total GDP (in crore dollars) for the country with the third lowest per capita income?

(1) 181900 (2) 108460

(3) 145200 (4) 164560

**75.** Which country has the highest total GDP?

(1) Country 1 (2) Country 2

(3) Country 3 (4) Country 8

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** Hardly had I reached the (1)/ exhibition where I learnt (2)/ about the major robbery. (3)/ No Error (4)

**77.** No sooner did the sun rise (1)/ when we resumed the journey (2)/ after having a hasty breakfast. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four.

**77.** He _____ to the problem of air pollution in his speech.

(1) averted (2) adverted

(3) exclaimed (4) mentioned

**79.** Rohan is so magnanimous that everyone is always _____ to help him in his project.

(1) eager

(2) enthusiastic

(3) reluctant

(4) ignorant

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word **similar** in meaning to the word given.

**80. Succulent**

(1) Sucking (2) Soft

(3) Juicy (4) Pale

**81. Congregation**

(1) Discussion

(2) Attention

(3) Contraction

(4) Assembly

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in **meaning** to the word given.

**82. Evanescent**

(1) Enticing (2) Fleeting

(3) Erratic (4) Elusive

**83. Panegyric**

(1) Noxious (2) Criticism

(3) Fantasy (4) Grandeur

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To put a spoke in one's wheel**

(1) To be advantageous at the time of difficulty

(2) To maintain under all circumstances

(3) To blame the other party

(4) To put a difficulty in the way of progress

**85. At loggerheads**
(1) To suffer
(2) In conflict with someone
(3) To face tough competition
(4) To be in do or die situation

**Directions (86–87) :** Improve the bracketed part of the sentence.

**86.** She is **(the best and wisest)** girl in the class.
(1) best and wisest
(2) a best and a wisest
(3) the best and the wisest
(4) No improvement

**87.** The people of Japan are **(wiser than America.)**
(1) wiser than that of America.
(2) wiser than those of America.
(3) wiser to that of America.
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. One skilled in telling stories**
(1) Ventral (2) Fanatic
(3) Raconteur
(4) Tyro

**89. Fear of Fire**
(1) Arsonphobia
(2) Astraphobia
(3) Astrophobia
(4) Arrhenphobia

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Hygeine (2) Fascist
(3) Career (4) Apparel

**91.** (1) Reside (2) Revise
(3) Advise (4) Demice

**Directions (92–93) :** Each of the questions below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. He raised his voice against idol-worship.
Q. People are generally very open and accept social changes with a positive attitude.
R. Swami Dayanand Saraswati is remembered with reverence and affection among the social reformers of the nineteenth century.
S. India is a country which respects spiritualism much more than materialism.
(1) QRSP (2) PRSQ
(3) RSPQ (4) SQRP

**93.** P. For that we need people who possess not only high skills but high values as well.
Q. So the need of the hour is not only skill-based education but also value-inspired and value-based education.
R. When we talk of investing in education, a question arises as to what kind of education needs to be given to the youngster.
S. Our aim is to evolve not only an affluent society, but an egalitarian, just, humane and compassionate society.
(1) SPRQ (2) PRQS
(3) RQSP (4) RSPQ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**Please guide me.**
(1) You are requested to guide me.
(2) You have been requested to guide me.
(3) You were requested to guide me.
(4) You are being requested to guide me.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**The teacher said, "The Earth revolves around the sun."**
(1) The teacher said that the Earth is being revolving around the sun.
(2) The teacher said that the Earth revolves around the sun.
(3) The teacher said that the Earth revolved around the sun.
(4) The teacher said that the Earth had been revolving around the sun.

**Directions (96–100) :** In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The **(96)** of energy in India are met from both commercial and non commercial sources. The most **(97)** sources of energy today are coal and natural gas, hydro electricity and nuclear power. On the other hand, firewood, cow-dung cakes and vegetable waste etc. **(98)** non commercial forms of energy. While non commercial forms of energy **(99)** demand, coal is the **(100)** source of commercial energy in India.

**96.** (1) requirements
(2) sources
(3) availability
(4) lessen

**97.** (1) vital
(2) insignificant
(3) important
(4) expensive

**98.** (1) constitute
(2) combines
(3) mixes
(4) collaborates

**99.** (1) need (2) meet
(3) shed (4) rests

**100.** (1) smallest (2) hardest
(3) largest (4) heaviest

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (2) | **3.** (1) | **4.** (3) |
| **5.** (4) | **6.** (4) | **7.** (3) | **8.** (3) |
| **9.** (3) | **10.** (2) | **11.** (2) | **12.** (4) |
| **13.** (2) | **14.** (4) | **15.** (1) | **16.** (4) |
| **17.** (3) | **18.** (3) | **19.** (2) | **20.** (3) |
| **21.** (2) | **22.** (2) | **23.** (4) | **24.** (4) |
| **25.** (1) | **26.** (3) | **27.** (1) | **28.** (4) |
| **29.** (4) | **30.** (2) | **31.** (3) | **32.** (4) |
| **33.** (2) | **34.** (2) | **35.** (4) | **36.** (3) |
| **37.** (4) | **38.** (1) | **39.** (1) | **40.** (2) |
| **41.** (4) | **42.** (1) | **43.** (2) | **44.** (2) |
| **45.** (1) | **46.** (3) | **47.** (3) | **48.** (2) |
| **49.** (2) | **50.** (*) | **51.** (2) | **52.** (2) |
| **53.** (3) | **54.** (1) | **55.** (3) | **56.** (4) |
| **57.** (3) | **58.** (3) | **59.** (2) | **60.** (1) |
| **61.** (1) | **62.** (4) | **63.** (2) | **64.** (3) |
| **65.** (3) | **66.** (2) | **67.** (3) | **68.** (2) |
| **69.** (3) | **70.** (4) | **71.** (3) | **72.** (4) |
| **73.** (2) | **74.** (4) | **75.** (3) | **76.** (2) |
| **77.** (2) | **78.** (2) | **79.** (1) | **80.** (3) |
| **81.** (4) | **82.** (*) | **83.** (2) | **84.** (4) |
| **85.** (2) | **86.** (3) | **87.** (2) | **88.** (3) |
| **89.** (1) | **90.** (1) | **91.** (4) | **92.** (4) |
| **93.** (4) | **94.** (1) | **95.** (2) | **96.** (1) |
| **97.** (3) | **98.** (1) | **99.** (2) | **100.** (3) |

## EXPLANATIONS

**1.** (2) The deficiency of iodine causes Goiter. Similarly, the deficiency of iron causes Anaemia.

**2.** (2) D E : O

↓ ↓ ↓

4 5 15

$\Rightarrow (4 \times 2) + (5 \times 2) - 3$

$\Rightarrow 8 + 10 - 3 = 15$

Similarly,

A F

↓ ↓

1 6

$\Rightarrow (1 \times 2) + (6 \times 2) - 3$

$\Rightarrow 2 + 12 - 3 = 11 \Rightarrow$ K

**3.** (1) 56 : 41

$\Rightarrow (5 + 6) \times 4 - 3$

$\Rightarrow 11 \times 4 - 3$

$\Rightarrow 44 - 3 = 41$

Similarly,

94 : ?

$\Rightarrow ? = (9 + 4) \times 4 - 3$

$\Rightarrow ? = 13 \times 4 - 3$

$\Rightarrow ? = 52 - 3 = \boxed{49}$

**4.** (3) Except the word 'Huge', all other words indicate location. 'Huge' means 'very large in size or amount'.

**5.** (4) M ⟷ N

Pairs of opposite letters.

N ⟷ M

O ⟷ L

The opposite letter of E is V.

The opposite letter of T is G.

**6.** (4) Except the number 633, in all other numbers the sum of the first and the third digits is equal to the second digit.

$253 \Rightarrow 2 + 3 = 5$

$473 \Rightarrow 4 + 3 = 7$

$143 \Rightarrow 1 + 3 = 4$

But, $633 \Rightarrow 6 - 3 = 3$

**7.** (3) Arrangement of words as per order in the dictionary :

5. Flinchers

↓

1. Flinching

↓

3. Flinpites

↓

2. Flintlock

↓

4. Flintlocks

**8.** (3) $\boxed{x}$ *y z a a* $\boxed{z}$ *y* $\boxed{x}$ /

*x y* $\boxed{z}$ *a a z y* $\boxed{x}$

**9.** (3) $19 \times 2 = 38$

$38 \times 3 = \boxed{114}$

$114 \times 2 = 228$

$228 \times 3 = 684$

$684 \times 2 = 1368$

**10.** (2) $\boxed{\phantom{R}}$, $\boxed{\phantom{Q}}$, $\boxed{\phantom{S}}$ > P > $\boxed{\phantom{T}}$

R > Q > S; P

R > Q > S > P > T

**11.** (2) Shweta is 27th from the left end.

7th to the right of Shweta means 34th from the left end.

Palak's position from the right end ⇒ 74 – 34 + 1 = 41st

**12.** (4) There is no 'B' letter in the given word. Therefore, the word CAPABLE cannot be formed.

There is no 'N' letter in the given word. Therefore, the word LUPIN cannot be formed.

There is no 'Y' letter in the given word. Therefore, the word PITTY cannot be formed.

C A P I T U $\boxed{\text{L A T E}}$ ⇒ T A L E

**13.** (2) B I O L O G Y

↕ ↕ ↕ ↕ ↕ ↕ ↕

Y R L O L T B

Therefore,

P H Y S I C S

↕ ↕ ↕ ↕ ↕ ↕ ↕

K S B H R X H

**14.** (4) $6 + 8 \div 4 - 4 = 8$

$\Rightarrow 6 - 8 \div 4 + 4 = 8$

$\Rightarrow 6 - 2 + 4 = 8$

$\Rightarrow 10 - 2 = 8$

**15.** (1) $4 \times 9 \times 3 = 4$

$\Rightarrow \sqrt{4+9+3} = 4$

$\Rightarrow \sqrt{16} = 4$

$5 \times 3 \times 1 = 3$

$\Rightarrow \sqrt{5+3+1} = 3$

$\Rightarrow \sqrt{9} = 3$

Therefore,

$9 \times 9 \times 7 = ?$

$\Rightarrow ? = \sqrt{9+9+7}$

$\Rightarrow ? = \sqrt{25} = \boxed{5}$

**16.** (4) First Figure

$(3 + 5) \times (4 + 7)$

$= 8 \times 11 = 88$

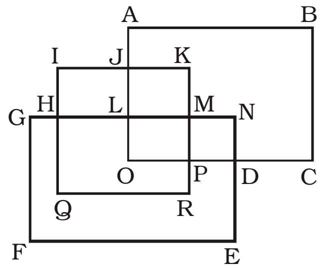
Second Figure

$(5 + 8) \times (2 + 6)$

$= 13 \times 8 = 104$

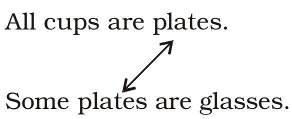
Third Figure
(5 + 3) × (7 + 8)
= 8 × 15 = 120

**17.** (3)




The rectangles are :
IJLH; JKML; MNDP;
LMPO; IKMH; JKPO;
HMRQ; LNDO; ABCO;
IKRQ; GNEF
Thus, there are 11 rectangles in the given figure.

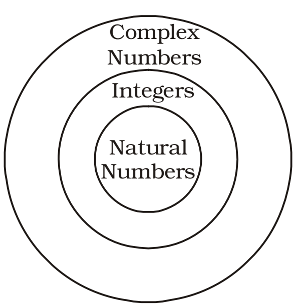
**18.** (3) First Premise is Universal Affirmative (A–type).
Second Premise is Particular Affirmative (I–type).



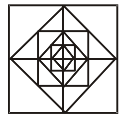

A + I ⇒ No Conclusion

**19.** (2) After folding the figure :
A lies opposite D. Therefore, figure given in the Option (1) canot be formed.
B lies opposite E. Therefore, figure given in the Option (4) cannot be formed.
N lies opposite O. Therefore, figure given in the Option (3) cannot be formed.

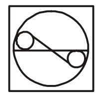
**20.** (3) All natural numbes are Integers and in trun, all Integers are complex numbers.



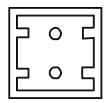

**21.** (2)



**22.** (2)



**23.** (4)



**24.** (4)

**25.** (1) S ⇒ 00, 12, 24, 31, 43
T ⇒ 59, 66, 78, 85, 97
R ⇒ 01, 13, 20, 32, 44
A ⇒ 55, 67, 79, 86, 98
W ⇒ 04, 11, 23, 30, 42

| Option | S | T | R | A | W |
|---|---|---|---|---|---|
| (1) | 00 | 78 | 13 | 67 | 23 |
| (2) | 12 | 59 | 01 | 55 | ~~10~~ |
| (3) | 24 | 97 | 20 | 86 | ~~31~~ |
| (4) | 43 | 66 | 44 | 98 | ~~43~~ |

**26.** (3) Malthusianism is the idea that population growth is potentially exponential while the growth of food supply is arithmetical at best. It tried to bring out the relationship between population increase and resource scarcity. Neo-Malthusianism is the advocacy of population control programs, to ensure resources for current and future populations.

**27.** (1) The three-sector theory is an economic theory which divides economies into three sectors of activity: extraction of raw materials (primary), manufacturing (secondary), and services (tertiary). Agriculture comes under primary; shoe factory under secondary and consultancy service under tertiary sector of economy.

**28.** (4) The Fundamental Duties are contained in Article 51A under Part IVA of the Indian Constitution. The Fundamental Duties of citizens were added to the Constitution by the 42nd Amendment in 1976. Originally ten in number, the Fundamental Duties were increased to eleven by the 86th Amendment in 2002.

**29.** (4) The Directive Principles of State Policy (DPSP) are contained in Part IV (Article 36-51) of the Constitution of India. These are the guidelines or principles given to the federal institutes governing the state of India, to be kept in citation while framing laws and policies.

**30.** (2) Dayananda Saraswati was a Hindu religious leader and founder of the Arya Samaj who believed in the infallible authority of the Vedas. His slogan was 'go back to the Vedas' whose authority he accepted. He believed that only true knowledge of the Vedas could rid all evils that had crept into the Hindu society.

**31.** (3) Raja Todar Mal was the Revenue or Finance Minister of the Mughal empire during Akbar's reign. He introduced standard weights and measures, aa new system of revenue known as zabt and a system of taxation called dahshala. He was one of the nine gems of Akbar's court.

**32.** (4) Gravitational field between two bodies, as expressed by Newtonian equation, is inversely proportional to square of distance between their centres of gravity i.e. the higher the distance between the bodies the lower the gravitational field. The Earth is not a perfect sphere and its radius varies at poles and the equator,

the radius being more at the equator than at the poles. This means that a body at the equator is farther away from the earth's centre than a body at the poles. So, the gravitational force is maximum at the poles.

**33.** (2) A hygrometer, also known as a psychrometer, is a device that is used to measure the humidity in the air. There are two main types of hygrometers – a dry and wet bulb psychrometer and a mechanical hygrometer.

**34.** (2) Malaria is transmitted among humans by female mosquitoes of the genus Anopheles. Malaria is caused by a one-celled parasite called a Plasmodium. Female Anopheles mosquitoes pick up the parasite from infected people to carry out egg production, and such blood meals are the link between the human and the mosquito hosts in the parasite life cycle. Visceral leishmaniasis, also known as kala-azar and black fever, is caused by sandflies.

**35.** (4) Saffron is a spice derived from the flower of the saffron crocus (Crocus sativus), a species of crocus in the family Iridaceae. The flower has three stigmas, which are the distal ends of the plant's carpels. Together with its style, the stalk connecting the stigmas to the rest of the plant, these components are often dried and used in cooking as a seasoning and colouring agent. Generally, 150 000 crocus sativus flowers yield one kilo of stigmas and around 5 kilos of stigmas make one kilo of dried saffron useable as a spice.

**36.** (3) Plants have two different types of 'transport' tissue. Xylem transports water and solutes from the roots to the leaves, phloem transports food from the leaves to the rest of the plant.

**Comparison of xylem and phloem**

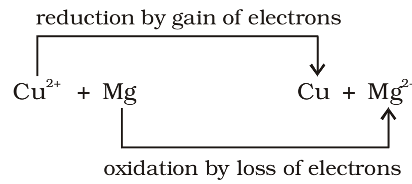
| Tissue | Process | What is moved | Structure |
|---|---|---|---|
| Xylem | Transpiration | Moves water and minerals from roots to leaves | Columns of hollow, dead reinforced cells |
| Phloem | Translocation | Moves food substances from leave to rest of plant | Columns of living cells |

**37.** (4) Speed is a scalar quantity. It is the rate of change in the distance travelled by an object; it has only magnitude and no direction. In contrast, velocity has both magnitude as well as direction; so, it is a vector quantity.

**38.** (1) Pure water freezes at 32 degrees Fahrenheit, 0 degrees Celsius, 273.15 Kelvin. However, to freeze at this temperature, there should be sites for nucleation,for example, dust, rough walls of container, etc. If there are no nucleation sites and water is left undisturbed, it won't freeze and will supercool below 0°C.

**39.** (1) The term bitmap essentially means a map of bits or specifically a 'spatially mapped array of bits'. A bitmap images uses different colored pixels, which are arranged in a manner to display an image. Examples of bitmap images include .png, .psd, .jpg, .gif, .tif, or .bmp.

**40.** (2) The process of losing electrons is called oxidation and the process of gaining electrons is called reduction. Most of the time, oxidation occurs in tandem with reduction since one atom loses electron to be gained by another. This is known as redox reaction.




In the above reaction, magnesium reduces the copper (II) ion by transferring electrons to the ion and neutralizing its charge. Therefore, magnesium is a reducing agent. Another way of putting this is that the copper (II) ion is removing electrons from the magnesium to create a magnesium ion. The copper (II) ion is acting as an oxidizing agent.

**41.** (4) Tungsten, a chemical element with symbol W, is used in incandescent light bulb filaments, X-ray tubes (as both the filament and target), electrodes in TIG welding, superalloys, and radiation shielding. It has the highest melting point of all the elements discovered, melting at 3422 °C (6192 °F, 3695 K). It also has the second highest boiling point, at 5930 °C.

**42.** (1) Deciduous trees and shrubs are plants that annually lose their leaves at the end of each growing season; usually during the winter, but can also occur during a dry season in warm climates. Common examples of deciduous trees include oak, maple, and hickory trees. Oak trees are characteristic deciduous trees that lose their leaves in the fall and re-grow them in the spring.

**43.** (2) The Entrepreneurship Development Scheme (EDS) under the New Economic Development Policy (NEDP) was launched at Aizawl in Mizoram on 18 January, 2017. The EDS could be instrumental in implementation of 17 Sustainable Development Goals of the United Nations with minimum harm to the environment.

**44.** (2) Dynamite was invented by Swedish chemist and engineer Alfred Nobelas a safe way of using nitroglycerin as a demolition agent. He obtained patents for his invention in England on 7 May, 1867 and in Sweden on 19 October, 1867. Dynamite rapidly gained wide-scale use as a safer alternative to gun powder and nitroglycerin.

**45.** (1) The Rovers Cup was a football tournament held in India. It was started by British football enthusiasts at Bombay in 1891. The last time this championship was held in the 2000-01 season. The Western India Football Association(WIFA) is making efforts to revive the tournament.

**46.** (3) Dandiya is the traditional folk-dance of Gujarat and Rajasthan. Along with Garba, it is the featured dance of Navratri evenings. Originating as devotional Garba dances, which were always performed in Durga's honour, this dance form is actually the staging of a mock-fight between the Goddess and Mahishasura. The sticks of the dance represent the swords of Durga.

**47.** (3) The 2016 Dronacharya award was given to to Indian cricket Test skipper Virat Kohli's coach Raj Kumar Sharma, athletics coach Nagapuri Ramesh, boxing coach Sagar Mal Dhayal, Pradeep Kumar (Swimming, lifetime), Dipa Karmakar's coach Bishweshwar Nandi and Mahabir Singh (wrestling, lifetime).

**48.** (2) Ace Against Odds is the 2016 biography of the Indian professional tennis player Sania Mirza. The book is her official biography chronicling her journey to becoming one of India and world's top female tennis player. The book was released at the hands of Shah Rukh Khan at Hyderabad in July 2016.

**49.** (2) India and Australia, on 12 April 2017, launched Sports partnership in Mumbai aimed at increasing cooperation in sports. Under the new partnership, Victoria University and the University of Canberra would work with India to assist in the establishment of a National Sports University similar to the Australian Institute of Sport.

**50.** (*) More than one option is correct. Besides, the question doesn't specify a definite timeframe.

India and China, in November 2002,**exchanged ground maps** during a meeting between officials from both countries in a bid to resolve a decades-long border dispute. Besides, India and Bangladesh, on 1 August 2015, **exchanged 162 adversely-held enclaves** to implement the historic Land Boundary Agreement, ending one of the world's most complex border disputes.

Best Answer : Since the question is on exchange of maps, the answer will be China.

**51.** (2) First, we find LCM of 7, 11 and 14.

$$\begin{array}{r|l} 7 & 7,\ 11,\ 14 \\ \hline & 1,\ 11,\ 2 \end{array}$$

$\therefore$ LCM = 2 × 7 × 11 = 154

$$\begin{array}{r} 154)\,1812\,(11 \\ 154\phantom{0} \\ \hline 272 \\ 154 \\ \hline 118 \end{array}$$

Remainder = 118

$\therefore$ Required number

= (154 – 118) = 36

**52.** (2) Time taken by A = $x$ days

$\therefore$ Time taken by B

= $1.5x$ days

According to the question,

$1.5x - x = 8$

$\Rightarrow 0.5\,x = 8$

$\Rightarrow x = \frac{8}{0.5} = \frac{80}{5} = 16$

$\therefore$ Time taken by B

= 16 × 1.5 = 24 days

Work done by A and B in the first two days = $\frac{1}{16} + \frac{1}{24}$

$= \frac{3+2}{48} = \frac{5}{48}$

Work done by them in first 18 days

$= \frac{9 \times 5}{48} = \frac{45}{48} = \frac{15}{16}$

Remaining work

$= 1 - \frac{15}{16} = \frac{1}{16}$

Now, time taken by A in doing $\frac{1}{16}$ work = 1 day

$\therefore$ Required time = 19 days

**53.** (3) Larger diagonal of rhombus = $d_1$ = 10 units

$\therefore$ Smaller diagonal = $d_2$

= 7 units

$\therefore$ Required ratio = $\dfrac{\frac{1}{2}d_1d_2}{{d_1}^2}$

$= \frac{1}{2} \cdot \frac{d_2}{d_1} = \frac{1}{2} \times \frac{7}{10} = 7 : 20$

**54.** (1) Marked price of table = Rs. $x$ and its cost price = Rs. 100 (let)

According to the question,

$x \times \frac{80}{100} = 160$

$\Rightarrow x = \frac{160 \times 100}{80} = \text{Rs. } 200$

$\therefore$ After a discount of 40%,

S.P. of table = Rs. $\left(\frac{200 \times 60}{100}\right)$

= Rs. 120

$\therefore$ Required profit per cent = 20%

**55.** (3) $\frac{A}{3} = \frac{B}{2} = \frac{C}{5} = k$ (let)

$\Rightarrow A = 3k$ ; $B = 2k$ ; $C = 5k$

$\therefore (C + A)^2 : (A + B)^2 : (B + C)^2$

$= (5k + 3k)^2 : (3k + 2k)^2 : (2k + 5k)^2$

$= (8k)^2 : (5k)^2 : (7k)^2$

= 64 : 25 : 49

**56.** (4) According to the question,

Sum of the present ages of mother, father and son

= (3 × 35 + 3 × 5) years

= (105 + 15) years = 120 years

Again,

sum of the present ages of mother and father

= (2 × 46 + 2 × 3) years

= (92 + 6) years = 98 years

$\therefore$ Son's present age

= (120 – 98) years = 22 years

**57.** (3) Let the C.P. of each article be Re. 1.

$\therefore$ C.P. of $x$ articles = Rs. $x$

Their S.P. = Rs. 60

According to the question,

$\frac{60 - x}{x} = \frac{20}{100} = \frac{1}{5}$

$\Rightarrow 300 - 5x = x$

$\Rightarrow 6x = 300 \Rightarrow x = \frac{300}{6} = 50$

**58.** (3) Let the maximum marks of the exam. be $x$.

According to the question,

$\frac{45x}{100} + 40 = \frac{55x}{100}$

$\Rightarrow \frac{55x}{100} - \frac{45x}{100} = 40$

$\Rightarrow \frac{10x}{100} = 40 \Rightarrow \frac{x}{10} = 40$

$\Rightarrow x = 40 \times 10 = 400$

**59.** (2) Distance covered by first person till 2 p.m.

= (10 × 2) km. = 20 km.

Distance covered by him till 4 pm.

= (20 + 20) km. = 40 km.

He will rest from 4 p.m. to 5 p.m.

Time taken by second person in covering 40 km

$= \frac{40}{15}$ hours

$= 2 \text{ hours } \frac{10}{15} \times 60$

= 40 minutes

$\therefore$ Required time = 4:40 p.m.

**60.** (1) C.I. – S.I. :

For 3 years,

$\Rightarrow P\left(\frac{R}{100}\right)^2 \left(\frac{300+R}{100}\right)$

For 2 years $\Rightarrow \frac{PR^2}{10000}$

According to the question,

$$\frac{P\left(\frac{R}{100}\right)^2\left(\frac{300+R}{100}\right)}{\frac{PR^2}{10000}} = \frac{23}{7}$$

$\Rightarrow \frac{300+R}{100} = \frac{23}{7}$

$\Rightarrow 2100 + 7R = 2300$

$\Rightarrow 7R = 2300 - 2100 = 200$

$\Rightarrow R = \frac{200}{7}\%$ per annum

**61.** (1) $\frac{x^2}{yz} + \frac{y^2}{zx} + \frac{z^2}{xy} = 3$

$\Rightarrow \frac{x^3 + y^3 + z^3}{xyz} = 3$

$\Rightarrow x^3 + y^3 + z^3 = 3xyz$

$\Rightarrow x + y + z = 0$

$\therefore (x + y + z)^3 = 0$

**62.** (4) $x^{\frac{1}{4}} + \frac{1}{x^{\frac{1}{4}}} = 2$

$\Rightarrow (x^{\frac{1}{4}})^2 + 1 = 2.x^{\frac{1}{4}}$

$\Rightarrow (x^{\frac{1}{4}})^2 - 2.x^{\frac{1}{4}} + 1 = 0$

$\Rightarrow (x^{\frac{1}{4}} - 1)^2 = 0$

$\Rightarrow x^{\frac{1}{4}} = 1 \Rightarrow x = 1^4 = 1$

$\therefore x^{81} + \frac{1}{x^{81}} = 1 + 1 = 2$

**63.** (2) $a(a + b + c) = 45$ ... (i)

$b(a + b + c) = 75$ ... (ii)

$c(a + b + c) = 105$ ... (iii)

On adding all three equations,

$a^2 + ab + ac + ab + b^2 + bc + ac + bc + c^2 = 45 + 75 + 105$

$\Rightarrow a^2 + b^2 + c^2 + 2ab + 2bc + 2ca = 225$

$\Rightarrow (a + b + c)^2 = 225$

$\Rightarrow a + b + c = \sqrt{225} = 15$

From equation (i),

$a = \frac{45}{15} = 3;$

From equation (ii),

$b = \frac{75}{15} = 5$

From equation (iii),

$c = \frac{105}{15} = 7$

$\therefore ab + bc + ca = 3 \times 5 + 5 \times 7 + 7 \times 3$

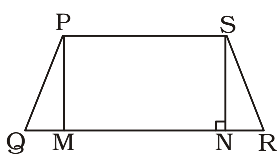
= 15 + 35 + 21 = 71

$\therefore (a + b + c)^2$
$= a^2 + b^2 + c^2 + 2(ab + bc + ca)$
$\Rightarrow 225 = a^2 + b^2 + c^2 + 2 \times 71$
$\Rightarrow a^2 + b^2 + c^2 = 225 - 142$
$= 83$

**64.** (3) $x^2 + \frac{1}{x^2} = 1$

$\Rightarrow x^4 + 1 = x^2$
$\Rightarrow x^4 - x^2 + 1 = 0$
$\Rightarrow (x^2 + 1)(x^4 - x^2 + 1) = 0$
$\Rightarrow x^6 + 1 = 0$
$\therefore x^{48} + x^{42} + x^{36} + x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1$
$= x^{42}(x^6 + 1) + x^{30}(x^6 + 1) + x^{18}(x^6 + 1) + x^6(x^6 + 1) + 1 = 1$

**65.** (3)



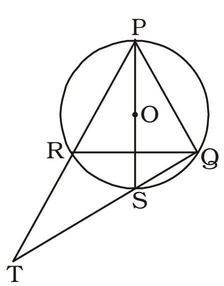

QM = NR = 9 cm.
$\therefore$ QR = (12 + 2 × 9) cm.
= 30 cm.
$\therefore$ Area of the trapezium PQRS

$= \frac{1}{2}$ (QR + PS) × SN

$= \frac{1}{2}$ (30 + 12) × 9

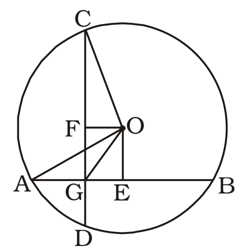
$= \frac{1}{2} \times 42 \times 9 = 189$ sq. cm.

**66.** (2)




PS is the bisector of ∠P. Hence, it passes through the centre O of circle.
$\therefore$ PS = diameter of circle.
∠PRS = 90° = ∠PQS
∠PQR = ∠PRQ = 60°
$\therefore$ TQR = 30° ; ∠QRT = 120°
∠QTR = 30°
$\therefore$ RT = RQ
$\therefore$ RT : RQ = 1 : 1

**67.** (3)




AB = 20 cm.
$\therefore$ OE ⊥ AB
$\therefore$ AE = EB = 10 cm.
In ΔOAE,

$OE = \sqrt{OA^2 - AE^2}$

$= \sqrt{15^2 - 10^2} = \sqrt{225 - 100}$

$= \sqrt{125}$ cm.
OF ⊥ CD
$\therefore$ CF = FD = 12 cm.
In ΔOCF,

$OF = \sqrt{OC^2 - CF^2}$

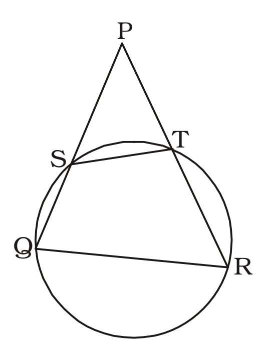
$= \sqrt{15^2 - 12^2} = \sqrt{225 - 144}$

$= \sqrt{81}$ cm. = GE
$\therefore$ In ΔOGE,

$OG = \sqrt{GE^2 + EO^2}$

$= \sqrt{81 + 125} = \sqrt{206}$ cm.

**68.** (2)




PQ and PR are secants which intersect at point P.
$\therefore$ PQ × PS = PR × PT
(PS + SQ) × PS
= (PT + TR) × PT
$\Rightarrow$ (6 + 4) × 6 = (5 + TR) × 5

$\Rightarrow 5 + TR = \frac{10 \times 6}{5} = 12$

$\Rightarrow$ TR = 12 – 5 = 7 cm.

**69.** (3) Expression

$= \sin^2(90 - \theta) - \frac{\{\sin(90° - \theta).\sin\theta\}}{\tan\theta}$

$= \cos^2\theta - \frac{\cos\theta.\sin\theta}{\frac{\sin\theta}{\cos\theta}}$

$= \cos^2\theta - \cos^2\theta = 0$

**70.** (4) Expression

$= \left[\frac{\cos^2\theta}{1+\sin\theta} - \frac{\sin^2\theta}{1+\cos\theta}\right]^2$

$= \left[\frac{1-\sin^2\theta}{1+\sin\theta} - \frac{1-\cos^2\theta}{1+\cos\theta}\right]^2$

$= [(1 - \sin\theta) - (1 - \cos\theta)]^2$

$[\because a^2 - b^2 = (a + b)(a - b)]$
$= (\cos\theta - \sin\theta)^2$
$= \cos^2\theta + \sin^2\theta - 2\sin\theta.\cos\theta$
$= 1 - 2\sin\theta.\cos\theta$
$= 1 - \sin 2\theta$

**71.** (3) $5\sec\theta - 3\tan\theta = 5$ ... (i)
$5\tan\theta - 3\sec\theta = x$ ... (ii)
On squaring both equations and subtracting (ii) from (i),
$(5\sec\theta - 3\tan\theta)^2 - (5\tan\theta - 3\sec\theta)^2 = 25 - x^2$
$25\sec^2\theta + 9\tan^2\theta - 30\sec\theta.\tan\theta - 25\tan^2\theta - 9\sec^2\theta + 30\sec\theta.\tan\theta = 25 - x^2$
$\Rightarrow 25(\sec^2\theta - \tan^2\theta) - 9(\sec^2\theta - \tan^2\theta) = 25 - x^2$
$\Rightarrow 25 - x^2 = 25 - 9 = 16$
$[\because \sec^2\theta - \tan^2\theta = 1]$
$\Rightarrow x^2 = 25 - 16 = 9$

$\Rightarrow x = \sqrt{9} = \pm 3$

**72.** (4) Required difference
= (24 – 6)% of 200 crores

$= \left(\frac{200 \times 18}{100}\right)$ crores

= 36 crores

**73.** (2) Population of country 5

$= \left(\frac{200 \times 7}{100}\right)$ crores

= 14 crores

∴ Total GDP

= $ (14 × 2260) crores

= $31640 crores

**74.** (4) Country with the third lowest per capita income

= Country 4

Population of country 4

$= \left(\frac{200 \times 17}{100}\right)$ crores

= 34 crores

∴ Total GDP

= $(34 × 4840) crores

= $164560 crores

**75.** (3) Population of country 3

$= \left(\frac{200 \times 15}{100}\right)$ crores

= 30 crores

Total GDP

= $(30 × 9900) crores

= $ 297000 crores

Total GDP of country 1

$= \$\left(200 \times \frac{12}{100} \times 11850\right)$ crores

= $ 284400 crores

**76.** (2) Hardly .... when ....... is correct form of connective. It is used to combine sentences denoting two simultaneous past actions.

Hence, exhibition when I learnt..... should be used here.

**77.** (2) No sooner .... than is correct form of connective.

Hence, than we resumed the journey..... should be used here.

**78.** (2) **Advert (Verb)** = refer to in speaking or writing.

**79.** (1) **Eager (Adjective)** = strongly wanting to do or have something.

**80.** (3) **Succulent (Adjective)** = juicy; moist; luscious; soft; tender.

**Look at the sentence :**

It was really good, a perfect mix of flavours to accompany the succulent meat.

**81.** (4) **Congregation (Noun)** = a group of people assembled for religious worship; gathering; assembly.

**Look at the sentence :**

The whole congregration was asked to stand and join in prayer for us.

**82.** (*) **Evanescent (Adjective)** = quickly fading or disappearing; lasting for only a short time; temporary.

**Enticing (Adjective)** = attractive and tempting; alluring; fascinating.

**Look at the sentences :**

It was evanescent, fading just as quickly as it had appeared, and translucent to begin with.

We caught enticing glimpses of tables laden with food.

**Evanescent** and **permanent** are antonymous.

**83.** (2) **Panegyric (Noun)** = a public speech or published text in praise of someone or something.

**Criticism (Noun)** = the expression of disapproval of something; condemnation; denunciation.

**Look at the sentences :**

She delivered a panegyric on the president-elect.

The designs for the new mosque have attracted widespread criticism.

**84.** (4) **To put a spoke in one's wheel** = to make it difficult for someone to achieve something they had planned to do.

**Look at the sentence :**

His letter really put a spoke in our wheel.

**85.** (2) **At loggerheads** = to disagree strongly about something; in violent dispute or disagreement.

**Look at the sentence :**

He is at loggerheads with the Prime Minister over public spending.

**86.** (3) Two qualities are evident. Hence, the best and the wisest..... should be used here.

....... The best and the wisest men whom I have ever known. – Memoirs of Sherlock Holmes.

**87.** (2) A person will be compared with a person, not a country. Hence, wiser than those of America..... should be used here.

**90.** (1) **Hygience (Noun)** = practices conducive to maintaining health.

**Apparel (Noun)** = clothes; clothing.

**91.** (4) **Demise (Noun)** = death

**Reside (Verb)** = have one's home in; be settled in.

**94.** (1) **Please** ⇒ You are requested.

You are requested to guide me.

**95.** (2) No change in tense in Indirect speech if the sentence shows a universal truth.

**98.** (1) **Constitute (Verb)** = be a part of whole; compose.

❑❑❑

SET 7

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 08.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Vacant : Empty :: Dearth : ?
(1) Descend (2) Scarcity
(3) Squander (4) Abundant

**2.** In the following question, select the related letters from the given alternatives :
HMPU : IOSY : : GMRF : ?
(1) FKOB (2) HOUJ
(3) HPUJ (4) HOJU

**3.** In the following question, select the related number from the given alternatives :
50 : 65 : : 122 : ?
(1) 157 (2) 145
(3) 147 (4) 155

**4.** In the following question, select the odd word pair from the given alternatives :
(1) Venus : Planet
(2) Moon : Satellite
(3) Jupiter : Black Hole
(4) Sun : Star

**5.** In the following question, select the odd letters from the given alternatives :
(1) KQ (2) DJ
(3) SZ (4) RX

**6.** In the following question, select the odd number from the given alternatives :
(1) 361 (2) 441
(3) 784 (4) 876

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Herbivorous
2. Harmony 3. House
4. Honour 5. Helm
(1) 12543 (2) 25143
(3) 21534 (4) 12354

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
A, C, E, G, ?
(1) H (2) I
(3) J (4) F

**9.** In the following question, select the missing number from the given series.
2, 4, 13, 41, 106, ?
(1) 172 (2) 191
(3) 219 (4) 232

**10.** Hitesh, Sunny, Vicky, Nitin and Bharat are arranged in ascending order of the height from the top. Hitesh is at third place. Bharat is between Nitin and Hitesh while Nitin is not at the bottom. Who has the maximum height among them ?
(1) Hitesh (2) Sunny
(3) Vicky (4) Nitin

**11.** If 'A + B' means 'A is father of B', 'A – B' means 'A is mother of B', 'A ∗ B' means 'A is brother of B' and 'A% B' means 'A is sister of B', then how is Q related to S in 'P + Q ∗ R – S' ?
(1) Husband (2) Uncle
(3) Brother (4) Father

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
ABANDONED
(1) BONDED (2) BANNED
(3) BLAND (4) BANE

**13.** In a certain code language, "REMOTE" is written as "KYSPGS" and "BRAND" is written as "IRDTC". How is "MOBILE" written in that code language ?
(1) FMJCPN (2) KQMEQN
(3) DKHANL (4) DMHCNN

**14.** If "÷" denotes "multiplied by", "+" denotes "subtracted from", "×" denotes "added to" and "–" denotes "divided by" then
12 – 6 + 28 × 3 ÷ 9 = ?
(1) – 24 (2) 1
(3) – 53 (4) 8

**15.** If 19 (36) 13 and 37 (81) 28 then what is the value of 'A' in 43 (A) 38 ?
(1) 49 (2) 25
(3) 34 (4) 64

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

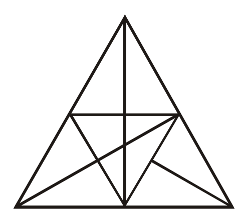
| 3 | 7 |
|---|---|
| 2 | 4 |

| 8 | 3 |
|---|---|
| 1 | 7 |

| 1 | 6 |
|---|---|
| 2 | ? |

(1) 2 (2) 7
(3) 14 (4) 28

**17.** How many triangles are there in the given figure ?



(1) 24 (2) 30
(3) 28 (4) 29

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly knows facts, read all the Conclusions and then decide which of the given Conclusions logically follows the given statements.

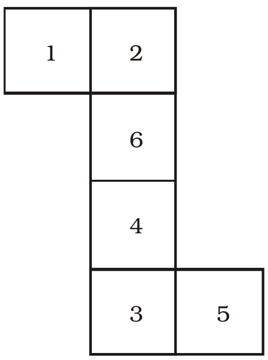
**Statements :**
I. All insects are dangerous.
II. All machines are dangerous.

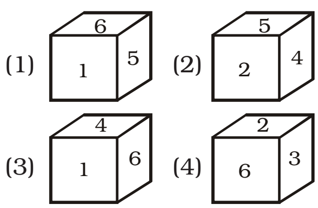
**Conclusions :**

I. All dangerous are insects.
II. All dangerous are machines.
III. Some machines are insects.

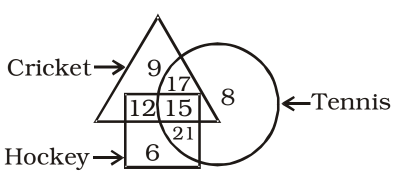
(1) Only Conclusion I follows.
(2) Only Conclusion II follows.
(3) Only Conclusion III follows.
(4) No Conclusion follows.

**19.** From the given options, which answer figure can be formed by folding the figure given in the question ?



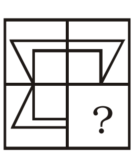

**20.** In the given figure, how many people like cricket and tennis both ?



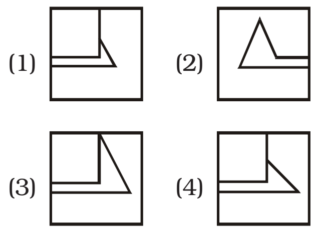

(1) 17 (2) 32
(3) 15 (4) 27

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

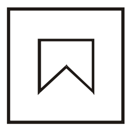



**Answer Figures :**

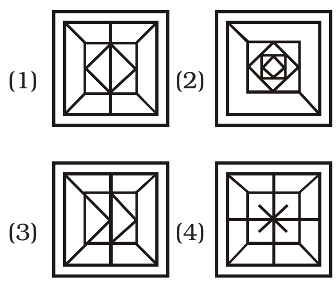



**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

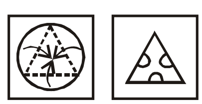


**Answer Figures :**

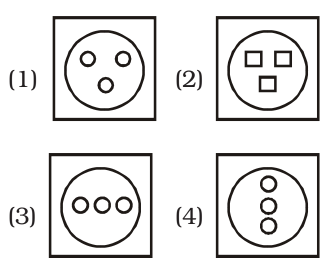



**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened ?

**Question Figures :**

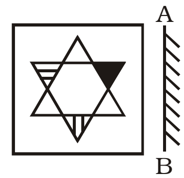


**Answer Figures :**

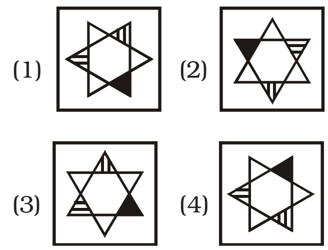



**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure ?

**Question Figure :**




**Answer Figures :**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'O' can be represented by 23, 30 etc., and 'D' can be represented by 76, 88 etc. Similarly, you have to identify the set for the word "**POND**".

**Matrix - I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | P | G | H | L | O |
| 1 | L | O | P | G | H |
| 2 | G | H | L | O | P |
| 3 | O | P | G | H | L |
| 4 | H | L | O | P | G |

**Matrix - II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | N | T | D | S | U |
| 6 | S | U | N | T | D |
| 7 | T | D | S | U | N |
| 8 | U | N | T | D | S |
| 9 | D | S | U | N | T |

(1) 00, 04, 67, 57
(2) 23, 12, 86, 69
(3) 43, 24, 98, 95
(4) 30, 42, 55, 87

## GENERAL AWARENESS

**26.** Who takes the decision regarding the savings and loan activities in a Self Help Group (SHG)?
(1) Private Bank
(2) Reserve Bank of India
(3) Members of group
(4) Non Government Organizations

**27.** Which amongst the following is not in the list of Maharatna?
(1) Coal India Limited
(2) Steel Authority of India Limited
(3) Hindustan Petroleum Corporation Limited
(4) Bharat Heavy Electricals Limited

**28.** In Indian constitution, the method of election of President has been taken from which country?
(1) Britain (2) USA
(3) Ireland (4) Australia

**29.** What is the literal meaning of the term "Quo-Warranto" ?
(1) We command
(2) To forbid
(3) By what authority (or) warrant
(4) None of these

**30.** Who was given the title of "The Ambassador of Hindu – Muslim Unity" for being the architect and mastermind of the historic Lucknow Pact ?
(1) Sir Sayyad Ahmad Khan
(2) Fazl-ul-Haq
(3) Syed Mohammad Sharfuddin Quadri
(4) Muhammad Ali Jinnah

**31.** What is the name of the court poet of King Harshavardhana?
(1) Tulsidas (2) Banabhatta
(3) Surdas (4) Raskhan

**32.** Marble comes under which category of rocks?
(1) Sedimentary
(2) Igneous
(3) Metamorphic
(4) None of these

**33.** Which of the following is most important for absorption of heat radiated from the Sun as well as from the Earth?
(1) Carbon dioxide
(2) Oxygen
(3) Carbon monoxide
(4) Nitrogen

**34.** Which among the following has segmented body?
(1) Phylum Mollusca.
(2) Phylum Arthopoda
(3) Phylum Annelida
(4) Phylum Coelenterata

**35.** Synapse gap is present between which of the following?
(1) Two neurons
(2) Brain and Spinal Cord
(3) Two Kidneys
(4) None of these

**36.** Which organ has finger like outgrowths which are called as Villi (Singular Villus)?
(1) Large Intestine
(2) Bladder
(3) Small Intestine
(4) Stomach

**37.** Which of the following is not a vector quantity?
(1) Acceleration
(2) Electric current
(3) Force
(4) Velocity

**38.** The phenomena of raising the outer edge of the curved roads above the inner edge to provide necessary centripetal force to the vehicles to take a safe turn is called _____.
(1) banking of roads
(2) cornering of roads
(3) elevation of roads
(4) tempering of roads

**39.** C++ is ________.
(1) an operating system
(2) a programming language
(3) a software
(4) None of these

**40.** What are isobars?
(1) Elements with same atomic number but different mass number
(2) Elements with different atomic number but same mass number
(3) Elements with different atomic number and different mass number
(4) Elements with same atomic number and same mass number

**41.** Which of the following pairs is INCORRECT?
I. Haematite : Iron
II. Pitchblende : Copper
III. Monazite : Thorium
(1) Only I
(2) Only II
(3) Only I and II
(4) Only I and III

**42.** In which year did Kyoto Protocol came into force?
(1) 2004 (2) 2005
(3) 2006 (4) 2007

**43.** The 7th pay commission has retained the rate of annual increment of _____.
(1) 2% (2) 2.57%
(3) 3% (4) 3.5%

**44.** Who discovered malaria causing germs?
(1) Christiaan Bernard
(2) Charles Louis Alphonse Laveran
(3) Dmitry Ivanovsky
(4) Martinus William Beijerinck

**45.** Match the following

| F–1 Race | Winner |
|---|---|
| 1. F–1 Australia Grand Prix, 2017 | a. Sebastian Vettel |
| 2. F–1 Russian Grand Prix, 2017 | b. Lewis Hamilton |
| 3. F–1 Chinese Grand Prix, 2017 | c. Valtteri Bottas |

(1) 1-a, 2-b, 3-c
(2) 1-b, 2-a, 3-c
(3) 1-b, 2-c, 3-a
(4) 1-a, 2-c, 3-b

**46.** Which of the following pair is INCORRECT?
(1) Amjad Ali Khan - Tabla
(2) Ustad Bismillah Khan - Shehnai
(3) Hema Malini - Bharatnatyam
(4) Shambhu Maharaj - Kathak

**47.** Who was conferred with the 2016 Nobel Prize for Literature?
(1) Bob Dylan
(2) Oliver Hart
(3) Yoshinori Ohsumi
(4) J. Michael Kosterlitz

**48.** Who is the author of the book titled 'The Gita for Children'?
(1) Puja Changoiwala
(2) Ruchira Gupta
(3) Priyanka Mookerjee
(4) Roopa Pai

**49.** With which country India celebrated its 25th year of diplomatic ties in 2017?
(1) France (2) Russia
(3) Israel (4) China

**50.** Which Asian country has opened 'Duge Bridge' (world's highest road bridge) for use in year 2016?
(1) China (2) Russia
(3) Japan (4) India

## QUANTITATIVE APTITUDE

**51.** Which one is the largest among the fractions

$\left(\frac{5}{113}\right), \left(\frac{7}{120}\right), \left(\frac{13}{145}\right)$ and $\left(\frac{17}{160}\right)$?

(1) $\frac{5}{113}$ (2) $\frac{7}{120}$
(3) $\frac{13}{145}$ (4) $\frac{17}{160}$

**52.** Nirmit can do $\frac{2}{3}$rd of a job in 18 days. Kashish is twice as efficient as Nirmit. In how many days will Kashish complete the job?
(1) $\frac{29}{4}$ (2) $\frac{27}{2}$
(3) $\frac{31}{2}$ (4) $\frac{13}{2}$

**53.** 40 men took a dip in a pool 30 metre long and 25 metre broad. If the average water displaced by a man is 5 $metre^3$, what will be the rise (in cm) in the water level of the pool?
(1) 25 (2) 26.66
(3) 27.33 (4) 28

**54.** An article is listed at Rs. 2375. A man purchases it at two successive discounts of 50% and 25% and spends Rs. 165 on repairing of article. If he sells the article at a profit of 62.5%, what is the selling price (in Rs.) of the article?
(1) 1467.6 (2) 1492.6
(3) 1715.39 (4) 1467.6

**55.** The length, breadth and height of a cuboid are in the ratio 19 : 11 : 13. If length is 30 cm more than height, then what is the volume (in $cm^3$) of this cuboid?
(1) 81510 (2) 89665
(3) 195300 (4) 339625

**56.** Average age of a team having 12 players is 23 years. If the age of the coach is also included, then the average age increases by 2 years. What is the age (in years) of the coach?
(1) 41 (2) 47
(3) 49 (4) 51

**57.** An item is sold at two successive gains of 30% and 20%. If the final selling price is Rs. 31200, of the item what is the cost price (in Rs.) of the item ?
(1) 15000 (2) 20000
(3) 22250 (4) 24000

**58.** The number of trees in a town is 17640. If the number of trees increases annually at the rate of 5%, how many trees were there 2 years ago?
(1) 14000 (2) 15000
(3) 16000 (4) 19450

**59.** Aman and Kapil start from Delhi and Gwalior respectively towards each other at the same time. They meet at Mathura and then take 196 minutes and 225 minutes respectively to reach Gwalior and Delhi. If speed of Aman is 30 km/hr, what is the speed (in km/hr) of Kapil?
(1) 28 (2) 30
(3) $\frac{225}{7}$ (4) $\frac{392}{15}$

**60.** The simple interest on a sum of money for 10 years is Rs. 3130. If the principal becomes 5 times after 5 years, what will be the total interest (in Rs.) obtained after 10 years?
(1) 6260 (2) 7825
(3) 9390 (4) 15650

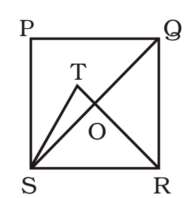
**61.** If $\frac{11-13x}{x}+\frac{11-13y}{y}+\frac{11-13z}{z}=5$, then what is the value of $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}$?
(1) 1 (2) $\frac{13}{11}$
(3) $\frac{13}{5}$ (4) 4

**62.** If $2x + \left(\frac{9}{x}\right) = 9$, what is the minimum value of $x^2 + \left(\frac{1}{x^2}\right)$?
(1) $\frac{95}{36}$ (2) $\frac{97}{36}$
(3) $\frac{86}{25}$ (4) $\frac{623}{27}$

**63.** If $\frac{(5x-y)}{(5x+y)}=\frac{3}{7}$, what is the value of $\frac{(4x^2+y^2+4xy)}{(9x^2+16y^2+24xy)}$?
(1) 0 (2) $\frac{3}{7}$
(3) $\frac{18}{49}$ (4) $\frac{1}{6}$

**64.** If $(x + y)^2 = xy + 1$ and $x^3 - y^3 = 1$, what is the value of $(x - y)$?
(1) 1 (2) 0
(3) – 1 (4) 2

**65.** In the given figure, PQRS is a square and SRT is an equilateral triangle. What is the value (in degrees) of ∠SOR?




(1) 45 (2) 55
(3) 60 (4) 75

**66.** ABCD is a parallelogram in which AB = 7 cm, BC = 9 cm and AC = 8 cm. What is the length (in cm) of other diagonal?
(1) 14 (2) $14\sqrt{2}$
(3) 7 (4) $7\sqrt{2}$

**67.** How many diagonals are there in octagon?
(1) 12 (2) 14
(3) 20 (4) 24

**68.** A square is inscribed in a quarter circle in such a way that two of its adjacent vertices on the radius are equidistant from the centre and other two vertices lie on the circumference. If the side of square is $\sqrt{\frac{5}{2}}$ cm, then what is the radius (in cm) of the circle?

(1) 2 (2) 2.5
(3) 5 (4) 10

**69.** If $\sec^2\theta + \tan^2\theta = \frac{5}{3}$, what is the value of $\tan 2\theta$?

(1) $2\sqrt{3}$
(2) $\sqrt{3}$
(3) $\frac{1}{\sqrt{3}}$
(4) Cannot be determined

**70.** A tower is broken at a point P above the ground. The top of the tower makes an angle 60° with the ground at Q. From another point R on the opposite side of Q angle of elevation of point P is 30°. If QR = 180 metre, what is the total height (in metre) of the tower?

(1) 90 (2) $45\sqrt{3}$
(3) $45(\sqrt{3}+1)$
(4) $45(\sqrt{3}+2)$

**71.** If $\sin\theta + \sin 5\theta = \sin 3\theta$ and $0 < \theta < \left(\frac{\pi}{2}\right)$, what is the value of θ (in degrees)?

(1) 30 (2) 45
(3) 60 (4) 75

**Directions (72–75) :** The table given below represents the cost, revenue and tax rate for XYZ Limited for a period of 8 years. Cost and revenue are given in Rs. '000 crores.

| Year | Revenue | Cost | Tax rate |
|---|---|---|---|
| Y1 | 800 | 600 | 20% |
| Y2 | 1100 | 850 | 22% |
| Y3 | 1200 | 900 | 22% |
| Y4 | 1200 | 950 | 25% |
| Y5 | 1350 | 1050 | 30% |
| Y6 | 1500 | 1200 | 30% |
| Y7 | 1600 | 1240 | 33% |
| Y8 | 1850 | 1400 | 15% |

Profit for any year = revenue – cost

Profit after tax for any year = profit of that year – tax of that year

Tax on any year = tax rate of that year × profit of the year

**72.** How much tax (in Rs '000 crores) was paid by XYZ limited in Y7?

(1) 90 (2) 99
(3) 118.8 (4) 126

**73.** Which of the following is correct about profit after tax for years Y2, Y6 and Y8?

(1) Y8 > Y6 = Y2
(2) Y6 > Y2 > Y8
(3) Y8 > Y6 > Y2
(4) Y6 = Y8 > Y2

**74.** How many distinct values of yearly profit are there?

(1) 3 (2) 4
(3) 5 (4) 6

**75.** What is the total sum (in '000 crores) of profit after tax for Y1 to Y8?

(1) 1763.6 (2) 1803.2
(3) 1820.2 (4) 1872.4

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of a sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** My elder son deals with (1)/ spare parts and manages (2)/ his bread and butter. (3)/ No Error (4)

**77.** Sneha was accused for murder of her husband (1)/ but the court found her (2)/ not guilty and acquitted her. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, each sentence given with blanks is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** My sister's marriage passed _____ peacefully.

(1) away (2) by
(3) off (4) out

**79.** There are _____ books on computer science in your school library, so you need to purchase them from the market.

(1) a few (2) a little
(3) few (4) the few

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Atrocity**

(1) Difficulty (2) Barbarity
(3) Shy (4) Gloomy

**81. Procrastinate**

(1) Divert (2) Deceive
(3) Debase (4) Delay

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Raucous**

(1) Dulcet (2) Hoarse
(3) Jarring (4) Torrent

**83. Predilection**

(1) Inclination
(2) Enduring
(3) Enmity (4) Domicile

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

**84. A wild goose chase**

(1) Fruitful search
(2) Timely search
(3) Useless search
(4) Wrong decision

**85. A moot point**

(1) Agreeable (2) Disputed
(3) Unclear (4) Unknown

**Directions (86–87) :** Improve the bracketed part of each sentence.

**86.** The Chairman appointed her (as a secretary) as she is efficient.

(1) a secretary
(2) as secretary
(3) secretary
(4) No improvement

**87.** I wish I (was) a superman.

(1) am
(2) have been
(3) were
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88.** One who is honourably discharged from service
(1) Belligerent
(2) Emeritus
(3) Truant
(4) Mercenary

**89.** A perception without objective reality
(1) Cynicism
(2) Hallucination
(3) Illusion
(4) Optimism

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Anxiety (2) Believe
(3) Height (4) Peity

**91.** (1) Admited (2) Benefited
(3) Married (4) Offered

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. Granted, political defection is increasingly less an act of ideological defiance than one of pure opportunism.
Q. Yet, for all it flaws, the current law recognizes and respects one fundamental principle: The right to dissent .
R. A blanket ban on defection will weaken rather than strengthen democracy, in whose name it is being sought to be imposed.
S. Granted also that it is illogical to allow a third of the party to split but not in a lesser number.
(1) RPSQ (2) PSRQ
(3) RSPQ (4) PRSQ

**93.** P. As difficult as it may be to recognize what it is inside us that is making us respond with negativity, that is the path towards forgiveness.
Q. This will automatically change your relationship with the other person and you will feel much better.
R. We need to recognize our reaction to the other person as a mirror of something in ourselves.
S. Whatever, the issues might be, once you have discovered them, you can work on forgiving yourself.
(1) SQRP (2) SRQP
(3) RQPS (4) RPSQ

**Directions :** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**94.** After driving Dr. Bose to the hospital he dropped him at his guest house.
(1) After being driven to the hospital Dr. Bose was dropped at his guest house.
(2) After he had driven Dr. Bose to the hospital he had dropped him at his guest house.
(3) After he was driving Dr. Bose to the hospital he was dropping him at his guest house .
(4) Dr. Bose was being driven to the hospital first and then he was being dropped at his guest house.

**Directions :** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**95.** I said to my friends, "let us go to a picnic for a change".
(1) I asked my friends if they would go to a picnic for a change.
(2) I asked my friends to go to a picnic for a change.
(3) I permitted my friends to go to a picnic for a change.
(4) I suggested to my friends that we should go to a picnic for a change.

**Directions (96–100)** : In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank numbered out of the four alternatives.

Literature is a **(96)** through which a person conveys his ideas towards or protest **(97)** different norms of society. The words that deal with a **(98)** issue are of particular importance in literature. They are **(99)** with a particular purpose in **(100)**.

**96.** (1) base (2) medium
(3) source (4) subject

**97.** (1) against (2) for
(3) in (4) off

**98.** (1) broad (2) insensitive
(3) moral (4) economical

**99.** (1) brought (2) founded
(3) represented
(4) written

**100.** (1) all (2) hand
(3) mind (4) total

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (2) | **3.** (2) | **4.** (3) |
| **5.** (3) | **6.** (4) | **7.** (2) | **8.** (2) |
| **9.** (4) | **10.** (4) | **11.** (2) | **12.** (3) |
| **13.** (2) | **14.** (2) | **15.** (2) | **16.** (3) |
| **17.** (4) | **18.** (4) | **19.** (3) | **20.** (2) |
| **21.** (3) | **22.** (3) | **23.** (1) | **24.** (2) |
| **25.** (1) | **26.** (3) | **27.** (3) | **28.** (3) |
| **29.** (3) | **30.** (4) | **31.** (2) | **32.** (3) |
| **33.** (1) | **34.** (3) | **35.** (1) | **36.** (3) |
| **37.** (2) | **38.** (1) | **39.** (2) | **40.** (2) |
| **41.** (2) | **42.** (2) | **43.** (3) | **44.** (2) |
| **45.** (4) | **46.** (1) | **47.** (1) | **48.** (4) |
| **49.** (3) | **50.** (1) | **51.** (4) | **52.** (2) |
| **53.** (2) | **54.** (3) | **55.** (4) | **56.** (3) |
| **57.** (2) | **58.** (2) | **59.** (1) | **60.** (3) |
| **61.** (4) | **62.** (2) | **63.** (1) | **64.** (1) |
| **65.** (4) | **66.** (1) | **67.** (3) | **68.** (2) |
| **69.** (2) | **70.** (4) | **71.** (1) | **72.** (3) |
| **73.** (3) | **74.** (3) | **75.** (3) | **76.** (1) |
| **77.** (1) | **78.** (3) | **79.** (3) | **80.** (2) |
| **81.** (4) | **82.** (1) | **83.** (3) | **84.** (3) |
| **85.** (2) | **86.** (4) | **87.** (3) | **88.** (2) |
| **89.** (2) | **90.** (4) | **91.** (1) | **92.** (1) |
| **93.** (4) | **94.** (1) | **95.** (4) | **96.** (2) |
| **97.** (1) | **98.** (3) | **99.** (4) | **100.** (3) |

## EXPLANATIONS

**1.** (2) Vacant and Empty are synonymous to each other. Similarly, Dearth and Sacrcity are synonymous to each other.

**2.** (2)

H M P U ⟶ I O S Y

+1, +2, +3, +4

Similarly,

G M R F ⟶ H O U J

+1, +2, +3, +4

**3.** (2) $50 = (7)^2 + 1$

$65 = (8)^2 + 1$

Similarly,

$122 = (11)^2 + 1$

$? = (12)^2 + 1$

$= 144 + 1 = 145$

**4.** (3) Except Jupiter : Black Hole, in all other pairs the first belongs to the second. Venus is a Planet. Moon is a Satellite. Sun is a Star. Jupiter is also a Planet.

**5.** (3) K $\xrightarrow{+6}$ Q

D $\xrightarrow{+6}$ J

R $\xrightarrow{+6}$ X

But,

S $\xrightarrow{+7}$ Z

**6.** (4) Except the number 876, all other numbers are perfect squares.

361 = 19 × 19

441 = 21 × 21

784 = 28 × 28

**7.** (2) Arrangement of words as per order in the dictionary :

2. Harmony
↓
5. Helm
↓
1. Herbivorous
↓
4. Honour
↓
3. House

**8.** (2) A $\xrightarrow{+2}$ C $\xrightarrow{+2}$ E $\xrightarrow{+2}$ G $\xrightarrow{+2}$ I

**9.** (4)

2 4 13 41 106 **232**

+2 +9 +28 +65 +126

+7 +19 +37 +61

+12 +18 +24

+6 +6

**10.** (4)

(Order, top to bottom:) [ ] [ ] Hitesh, Bharat, Nitin ↓

Clearly, Nitin has the maximum height among them.

**11.** (2) P + Q → P is father of Q.

Q ★ R → Q is brother of R.

R – S → R is mother of S.

Q is maternal uncle of S.

**12.** (3) There is no 'L' letter in the given word. Therefore, the word BLAND cannot be formed.

A [B] A N [D O N E D] ⇒ BONDED

A [B A N D] O N [E D] ⇒ BANDED

A [B A N] D O N [E] D ⇒ BANE

**13.** (2)

R E M O T E ⟶ K Y S P G S

+6, +5, +4, +3, +2, +1

B R A N D ⟶ I R D T C

+5, +4, +3, +2, +1

Therefore,

M O B I L E ⟶ K Q M E Q N

+6, +5, +4, +3, +2, +1

**14.** (2)

| ÷ ⇒ × | + ⇒ – |
|---|---|
| × ⇒ + | – ⇒ ÷ |

$12 - 6 + 28 \times 3 \div 9 = ?$

$\Rightarrow ? = 12 \div 6 - 28 + 3 \times 9$

$\Rightarrow ? = 2 - 28 + 27$

$\Rightarrow ? = 29 - 28 = \boxed{1}$

**15.** (2) 19 (36) 13

⇒ 19 – 13 = 6

and, 6 × 6 = 36

37 (81) 28

⇒ 37 – 28 = 9

and, 9 × 9 = 81

Therefore, 43 (A) 38

⇒ 43 – 38 = 5

and, 5 × 5 = **25**

**16.** (3) First figure

3 × 7 × 4 × 2 = 168

Second Figure

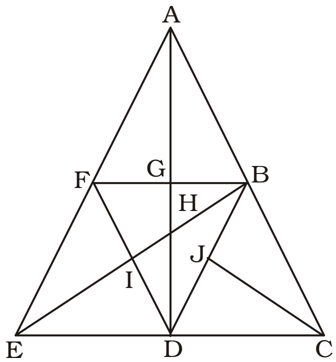
8 × 3 × 7 × 1 = 168

Third Figure

1 × 6 × ? × 2 = 168

$\Rightarrow ? = \frac{168}{12} = \boxed{14}$

**17.** (4)




The triangles are :

Δ AGF ; Δ AGB ; Δ AFB ; Δ BGH ; Δ BHD ; Δ CJB ; Δ CJD ; Δ CBD ; Δ BID ; Δ BEC ; Δ BFI ; Δ BFE ; Δ EIF ; Δ EID ; Δ EDF ; Δ DGF ; Δ DGB ; Δ DBF ; Δ DHI ; Δ HAE ; Δ AHB ; Δ FDA ; Δ BDA ; Δ HDE ; Δ AEB ; Δ ADE ; Δ ADC ; Δ BDE ; Δ AEC ;

Thus, there are 29 triangles in the given figure.

**18.** (4) Both the Premises are Universal Affirmative (A-type).

All insects are dangerous.

↙↗

Some dangerous are machines.

A + I ⇒ No Conclusion

**19.** (3) 2 lies opposite 4.

6 lies opposite 3.

1 lies opposite 5.

5 cannot be on the face adjacent to 1.

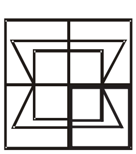
2 cannot be on the face adjacent to 4.

3 cannot be on the face adjacent to 6.

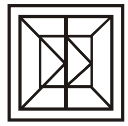
**20.** (2) The number of people who like cricket and tennis both can be represented by the numbers common to the triangle and the circle. Such numbers are 17 and 15.

∴ Required answer = 17 + 15 = 32

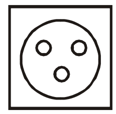
**21.** (3)



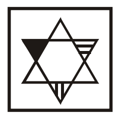
**22.** (3)



**23.** (1)



**24.** (2)



**25.** (1) P ⇒ 00, 12, 24, 31, 43
O ⇒ 04, 11, 23, 30, 42
N ⇒ 55, 67, 79, 86, 98
D ⇒ 57, 69, 76, 88, 95

| Option | P | O | N | D |
|---|---|---|---|---|
| (1) | 00 | 04 | 67 | 57 |
| (2) | 23 | 12 | 86 | 69 |
| (3) | 43 | 24 | 98 | 95 |
| (4) | 30 | 42 | 55 | 87 |

**26.** (3) Self-Help Group (SHG) is a small voluntary association of poor people, preferably from the same socio-economic background, who do not have access to formal financial institutions. They come together for the purpose of solving their common problems through self-help and mutual help. It works on the collective decision of members.

**27.** (3) There are 8 Maharatnas at present : Bharat Petroleum Corporation Limited; National Thermal Power Corporation; Oil and Natural Gas Corporation; Steel Authority of India Limited; Bharat Heavy Electricals Limited; Indian Oil Corporation Limited; Coal India Limited; Gas Authority of India Limited. Hindustan Petroleum Corporation Limited is a Navratna.

**28.** (3) The method of election of president in India has been borrowed from Ireland. The removal of the President was borrowed from the US constitution. The Irish constitution also inspired the inclusion of Directive Principles and the nomination of members to the Rajya Sabha.

**29.** (3) Quo warranto (Medieval Latin for "by what warrant?") is a prerogative writ requiring the person to whom it is directed to show what authority they have for exercising some right or power (or "franchise") they claim to hold.It restrains the person or authority to act in an office which he / she is not entitled to; and thus, stops usurpation of public office by anyone.

**30.** (4) Muhammad Ali Jinnah, then a member of the Indian National Congress as well as the Muslim League, made both the parties reach an agreement in Lucknow in 1916 to pressurize the British government to adopt a more liberal approach to India and give Indians more authority to run their country. Due to the reconciliation brought about by Jinnah between the Congress and the League, Sarojini Naidu, gave him the title of "the Ambassador of Hindu-Muslim Unity".

**31.** (2) Banabhatta was the *Asthana Kavi*or court poet in the court of King Harsha Vardhana, who reigned c. 606–647 CE in north India first from Thanesar, and later Kannauj. Bana's principal works include the Harshacharita and one of the world's earliest novels, Kadambari.

**32.** (3) Marble is a metamorphic rock that forms when limestone is subjected to the heat and pressure of metamorphism. It is composed primarily of the mineral calcite ($CaCO_3$) and usually contains other minerals, such as clay minerals, micas, quartz, pyrite, iron oxides, and graphite. Under the conditions of metamorphism, the calcite in the limestone recrystallizes to form a rock that is a mass of interlocking calcite crystals.

**33.** (1) Carbon dioxide is a greenhouse gas that absorbs heat radiated from the Sun as well as re-radiated heat from the

Earth's surface. It not only retains the solar radiation, but, absorbs thermal infrared energy (heat) radiated by the surface. It absorbs thermal infrared energy with wavelengths in a part of the energy spectrum that other gases do not. It is believed to have played an important effect in regulating Earth's temperature throughout its 4.7-billion-year history.

**34.** (3) The Annelida, also known as the ringed worms or segmented worms, are a large phylum, with over 17,000 extant species including ragworms, earthworms, and leeches. The fundamental characteristic of the phylum is the division of the body into a linear series of cylindrical segments, or metameres. Each metamere consists of a section of the body wall and a compartment of the body cavity with its internal organs.

**35.** (1) The gap between the two neurons is called the synapse. It is a structure that permits a neuron (or nerve cell) to pass an electrical or chemical signal to another neuron. Synapses are essential to neuronal function : neurons are cells that are specialized to pass signals to individual target cells, and synapses are the means by which they do so.

**36.** (3) The inner walls of the small intestine have thousands of finger-like outgrowths called villi (singular villus). The villi increases the absorption of the digested food. Each villus has a network of thin and small blood vessels close to its surface. The surface of the villi absorbs the digested food materials.

**37.** (2) For a physical quantity to be termed a vector quantity, having magnitude and direction is not enough. The quantity should obey the laws of vector addition, too. Electric current is a scalar quantity.It represents the direction of flow of positive charge but it is treated as a scalar quantity because current follows the laws of scalar addition and not the laws of vector addition. This is because the angle between the wires carrying current do not affect the total current in the circuit.

**38.** (1) The phenomenon of raising outer edge of the curved road above the inner edge is to provide necessary centripetal force to the vehiclesto take a safer turn and the curved road is called Banking of Roads.

If a car is on a level (unbanked) surface, the forces acting on the car are its weight, mg, pulling the car downward, and the normal force, N, due to the road, which pushes the car upward. Both of these forces act in the vertical direction and have no horizontal component. If there is no friction, there is no force that can supply the centripetal force required to make the car move in a circular path - there is no way that the car can turn.

**39.** (2) C++ is a general-purpose programming language. It has imperative, object-oriented and generic programming features, while also providing facilities for low-level memory manipulation.It was designed with a bias toward system programming and embedded, resource-constrained and large systems, with performance, efficiency and flexibility of use as its design highlights.

**40.** (2) Isobars are atoms of different chemical elements that have the same number of nucleons. Correspondingly, isobars differ in atomic number (number of protons) but have the same mass number. An example of a series of isobars is $^{40}S$, $^{40}Cl$, $^{40}Ar$, $^{40}K$, and $^{40}Ca$. The nuclei of these nuclides all contain 40 nucleons; however, they contain varying numbers of protons and neutrons.

**41.** (2) Pitchblende is a radioactive, uranium-rich mineral and ore. It has a chemical composition that is largely $UO_2$, but also contains $UO_3$ and oxides of lead, thorium, and rare earth elements. Commonly referred to as Uraninite, it is known as pitchblende due to its black color and high density.

**42.** (2) The Kyoto Protocol was adopted in Kyoto, Japan, on December 11, 1997 and entered into force on February 16, 2005. It is an international treaty which extends the 1992 United Nations Framework Convention on Climate Change (UNFCCC) that commits State Parties to reduce greenhouse gas emissions.

**43.** (3) The 7th Central Pay Commission has retained the rate of annual increment at 3 per cent. The 7th CPC has also recommended withholding of annual increments in the case of those employees who are not able to meet the benchmark either for MACP or a regular promotion within the first 20 years of their service.

**44.** (2) Charles Louis Alphonse Laveran, a French army surgeon stationed in Constantine, Algeria, discovered that malaria was caused by a protozoan parasite in 1880. For his discovery, Laveran was awarded the Nobel Prize in 1907. Laveran also attributed parasitic protozoans as causative agent of trypanosomiasis.

**45.** (4) F1 Australian Grand Prix 2017 : Sebastian Vettel (Germany); F1 Russian Grand Prix 2017: Valtteri Bottas (Finland) won the race by 0.617 seconds over Sebastian Vettel, the smallest winning margin since the 2016 Abu Dhabi Grand Prix; F1 Chinese Grand Prix 2017: Lewis Hamilton (Britain)

**46.** (1) Amjad Ali Khanis an Indian classical musician who plays the Sarod. His family is part of the Bangash lineage and Khan is in the sixth gen-

eration of musicians; his family claims to have invented the sarod. He was awarded India's second highest civilian honor Padma Vibhushan in 2001.

**47.** (1) The Nobel Prize in Literature 2016 was awarded to Bob Dylan "for having created new poetic expressions within the great American song tradition". Regarded as the voice of a generation for his influential songs from the 1960s onward, Dylan is the only singer-songwriter to win the award.

**48.** (4) *The Gita for Children* has been authored by Roopa Rai. The Bhagavad Gita is the holy book of the Hindus. Published by Hachette India, the book provides as a solution to distresses and remedy to all the big/small problems faced by children, which parents usually have no time to answer or find it too exasperating or downright silly to deal with.

**49.** (3) India and Israel are celebrating 2017 as the silver jubilee of their diplomatic relations. Ever since the establishment of diplomatic relations in 1992, India and Israel have been cooperating in many areas like defence, agriculture, science and technology, etc. 2017 also marks the completion of 25 years of bilateral diplomatic ties between Kazakhstan and India.

**50.** (1) Duge Bridge, the world's highest bridge, was opened in south western China in December 2016. is raised 564 metres above the Beipan River in mountainous southwest China, making it the highest bridge ever built. It connects the provinces of Guizhou and Yunnan.

**51.** (4) Decimal equivalent of each fraction :

$\frac{5}{113} = 0.044;\ \frac{7}{120} = 0.058;$

$\frac{13}{145} = 0.089;\ \frac{17}{160} = 0.106$

Clearly, $\frac{17}{160}$ is the largest fraction.

**52.** (2) Time taken by Nirmit in doing $\frac{2}{3}$ work = 18 days

$\therefore$ Time taken by Nirmit in doing 1 work = $\frac{18 \times 3}{2}$ = 27 days

Kashish is twice as efficient as Nirmit.

$\therefore$ Time taken by Kashish

$= \frac{27}{2} = 13\frac{1}{2}$ days

**53.** (2) Volume of water displaced by 40 men = (40 × 5) cu. metre

= 200 cu. metre

If the rise in water level be $h$ metre, then

30 × 25 × $h$ = 200 metre

$\Rightarrow h = \left(\frac{200}{30 \times 25}\right)$ metre

$= \left(\frac{200 \times 100}{30 \times 25}\right)$ cm.

$= \frac{80}{3}$ cm. = 26.66 cm.

**54.** (3) Single equivalent discount

$= \left(x + y - \frac{xy}{100}\right)\%$

$= \left(50 + 25 - \frac{50 \times 25}{100}\right)\%$

= (75 – 12.5)% = 62.5%

$\therefore$ C.P. of article

= (100 – 62.5)% of 2375

= Rs. $\left(\frac{2375 \times 37.5}{100}\right)$

= Rs. 890.625

Actual cost = Rs. (890.625 + 165)

= Rs. 1055.625

To gain 62.5%,

Required S.P.

= Rs. $\left(\frac{1055.625 \times 162.5}{100}\right)$

= Rs. 1715.39

**55.** (4) Height of cuboid = $x$ cm.

$\therefore$ Its length = ($x$ + 30) cm.

According to the question,

$\frac{x + 30}{x} = \frac{19}{13}$

$\Rightarrow 19x = 13x + 390$

$\Rightarrow 6x = 390$

$\Rightarrow x = \frac{390}{6}$ = 65 cm.

Length = 65 + 30 = 95 cm.

$\therefore$ Breadth = $\frac{95}{19} \times 11 = 55$ cm.

$\therefore$ Volume of cuboid

= (95 × 55 × 65) cu. cm.

= 339625 cu. cm.

**56.** (3) Age of coach = 23 + total increase

= (23 + 2 × 13) years

= 49 years

**57.** (2) C.P. of article = Rs. $x$ (let)

Single equivalent profit

$= \left(30 + 20 + \frac{30 \times 20}{100}\right)\%$

= 56%

According to the question,

156% of $x$ = 31200

$\Rightarrow x \times \frac{156}{100} = 31200$

$\Rightarrow x = \frac{31200 \times 100}{156}$

= Rs. 20000

**58.** (2) Number of trees 2 years ago

$= \frac{P}{\left(1 + \frac{R}{100}\right)^T}$

$= \frac{17640}{\left(1 + \frac{5}{100}\right)^2} = \frac{17640}{\left(1 + \frac{1}{20}\right)^2}$

$= \frac{17640}{\left(\frac{21}{20}\right)^2} = \frac{17640 \times 20 \times 20}{21 \times 21}$

= 16000

**59.** (1) According to the question,

$\frac{v_1}{v_2} = \sqrt{\frac{T_2}{T_1}}$

$\Rightarrow \frac{30}{v_2} = \sqrt{\frac{225}{196}} = \frac{15}{14}$

$\Rightarrow 15v_2 = 30 \times 14$

$\Rightarrow v_2 = \frac{30 \times 14}{15}$ = 28 kmph.

**60.** (3) S.I. for first 5 years

$= \text{Rs. } \left(\frac{3130}{10} \times 5\right) = \text{Rs. } 1565$

After 5 years, principal becomes five times of itself.

$\therefore$ S.I. for 10 years

= Rs. (1565 + 5 × 1565)

= Rs. (1565 + 7825)

= Rs. 9390

**61.** (4) $\frac{11}{x} - 13 + \frac{11}{y} - 13 + \frac{11}{z} - 13 = 5$

$\Rightarrow \frac{11}{x} + \frac{11}{y} + \frac{11}{z} - 39 = 5$

$\Rightarrow \frac{11}{x} + \frac{11}{y} + \frac{11}{z} = 39 + 5 = 44$

$\Rightarrow \frac{1}{x} + \frac{1}{y} + \frac{1}{z} = \frac{44}{11} = 4$

**62.** (2) $2x + \frac{9}{x} = 9$

$\Rightarrow 2x^2 + 9 = 9x$

$\Rightarrow 2x^2 - 9x + 9 = 0$

$\Rightarrow 2x^2 - 6x - 3x + 9 = 0$

$\Rightarrow 2x(x-3) - 3(x-3) = 0$

$\Rightarrow (x-3)(2x-3) = 0$

$\Rightarrow x = 3$ or $\frac{3}{2}$

$\therefore$ Minimum value of $\left(x^2 + \frac{1}{x^2}\right)$

$= \left(\frac{3}{2}\right)^2 + \frac{1}{\left(\frac{3}{2}\right)^2}$

$= \frac{9}{4} + \frac{4}{9}$

$= \frac{81+16}{36} = \frac{97}{36}$

**63.** (1) $\frac{5x-y}{5x+y} = \frac{3}{7}$

$\Rightarrow \frac{5x+y}{5x-y} = \frac{7}{3}$

By componendo and dividendo,

$\frac{5x+y+5x-y}{5x+y-5x+y} = \frac{7+3}{7-3}$

$\Rightarrow \frac{10x}{2y} = \frac{10}{4}$

$\Rightarrow \frac{x}{y} = \frac{1}{2}$ ...(i)

$\therefore$ Expression

$= \frac{4x^2 + y^2 - 4xy}{9x^2 + 16y^2 + 24xy}$

$= \left(\frac{2x-y}{3x+4y}\right)^2 = \left(\frac{2\frac{x}{y} - 1}{3\frac{x}{y} + 4}\right)^2$

$= \left(\frac{2 \times \frac{1}{2} - 1}{3 \times \frac{1}{2} + 4}\right)^2 = 0$

**64.** (1) $(x+y)^2 = xy + 1$

$\Rightarrow x^2 + 2xy + y^2 = xy + 1$

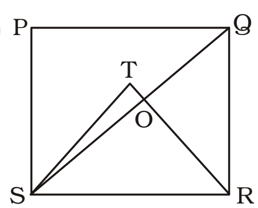
$\Rightarrow x^2 + xy + y^2 = 1$ ...(i)

$\therefore x^3 - y^3 = 1$

$\Rightarrow (x+y)(x^2 + xy + 1) = 1$

$\Rightarrow x - y = 1$

**65.** (4)




$\Delta$SRT is an equilateral triangle.

$\angle TSR = 60°$ ; $\angle QSR = 45°$

$\therefore \angle TSO = 15°$

$\therefore \angle TOS = 180° - 60 - 15°$

$= 105°$

$\therefore \angle SOR = 180° - \angle TOS$

$= 180° - 105° = 75°$

**66.** (1) $a = 7$ cm., $b = 9$ cm., $d_1 = 8$ cm.

$\therefore d_2 = \sqrt{2a^2 + 2b^2 - d_1^2}$

$= \sqrt{2 \times 7^2 + 2 \times 9^2 - 8^2}$

$= \sqrt{2 \times 49 + 2 \times 81 - 64}$

$= \sqrt{98 + 162 - 64}$

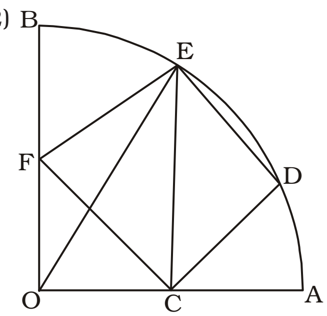
$= \sqrt{196} = 14$ cm.

**67.** (3) Number of diagonals in a $n$–sided polygon.

$= \frac{n(n-3)}{2} = \frac{8(8-3)}{2}$

$= \frac{8 \times 5}{2} = 20$

**68.** (2)




OC = OF = $x$ cm.

CF = $\sqrt{\frac{5}{2}}$ cm.

From right angled $\Delta$OCF,

$OF^2 + OC^2 = CF^2$

$\Rightarrow x^2 + x^2 = \left(\frac{\sqrt{5}}{\sqrt{2}}\right)^2 = \frac{5}{2}$

$\Rightarrow 2x^2 = \frac{5}{2}$

$\Rightarrow x^2 = \frac{5}{4}$

$\Rightarrow x = \frac{\sqrt{5}}{2}$ cm.

$\therefore \angle FCO = 45°; \angle FCE = 45°$

CE = diagonal of square

$= \sqrt{2} \times \frac{\sqrt{5}}{\sqrt{2}}$

$= \sqrt{5}$ cm.

$\therefore OE = \sqrt{OC^2 + CE^2}$

$= \sqrt{\left(\frac{\sqrt{5}}{2}\right)^2 + \left(\sqrt{5}\right)^2}$

$= \sqrt{\frac{5}{4} + 5} = \sqrt{\frac{5+20}{4}} = \sqrt{\frac{25}{4}}$

$= \frac{5}{2} = 2.5$ cm.

**69.** (2) $\sec^2\theta + \tan^2\theta = \frac{5}{3}$

$\Rightarrow 1 + \tan^2\theta + \tan^2\theta = \frac{5}{3}$

$\Rightarrow 2\tan^2\theta = \frac{5}{3} - 1 = \frac{5-3}{3}$

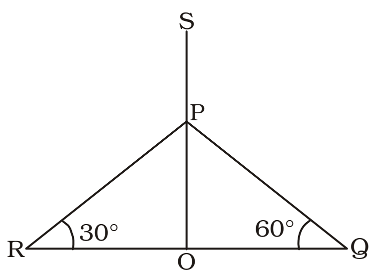
$\Rightarrow 2\tan^2\theta = \frac{2}{3} \Rightarrow \tan^2\theta = \frac{1}{3}$

$\Rightarrow \tan\theta = \frac{1}{\sqrt{3}} = \tan 30°$

$\Rightarrow \theta = 30°$

$\therefore \tan 2\theta = \tan 60° = \sqrt{3}$

**70.** (4)




OS = Tower,

$\angle PQO = 60°$ ; PRO = 30°

QR = 180 metre,

OQ = $x$ metre

$\therefore$ OR = $(180 - x)$ metre

From $\Delta$OPQ,

$\tan 60° = \frac{OP}{OQ}$

$\Rightarrow \sqrt{3} = \frac{OP}{x}$

$\Rightarrow OP = \sqrt{3}\, x$ metre ...(i)

From $\Delta$OPR,

$\tan 30° = \frac{OP}{OR}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{OP}{180 - x}$

$\Rightarrow OP = \frac{180 - x}{\sqrt{3}}$ ...(ii)

From equations (i) and (ii),

$\sqrt{3}\, x = \frac{180 - x}{\sqrt{3}}$

$\Rightarrow 3x = 180 - x$

$\Rightarrow 4x = 180$

$\Rightarrow x = \frac{180}{4} = 45$ metre

$\sin 60° = \frac{OP}{PQ}$

$\Rightarrow \frac{\sqrt{3}}{2} = \frac{45\sqrt{3}}{PQ}$

$\Rightarrow PQ = \frac{45\sqrt{3} \times 2}{\sqrt{3}} = 90$ metre

$\therefore$ Height of tower = OP + PQ

$= (45\sqrt{3} + 90)$ metre

$= 45(\sqrt{3} + 2)$ metre

**71.** (1) $\sin\theta + \sin 5\theta = \sin 3\theta$

$\Rightarrow 2\sin\frac{5\theta + \theta}{2} . \cos\frac{5\theta - \theta}{2}$

$= \sin 3\theta$

$\Rightarrow 2\sin 3\theta . \cos 2\theta = \sin 3\theta$

$\Rightarrow 2\sin 3\theta . \cos 2\theta - \sin 3\theta = 0$

$\Rightarrow \sin 3\theta (2\cos 2\theta - 1) = 0$

$\Rightarrow 2\cos 2\theta - 1 = 0$ as $\sin 3\theta \neq 0$

$\Rightarrow 2\cos 2\theta = 1$

$\Rightarrow \cos 2\theta = \frac{1}{2} = \cos 60°$

$\Rightarrow 2\theta = 60°$

$\Rightarrow \theta = 30°$

**72.** (3) Profit in Y7

= Rs. (1600 – 1240) thousand crores

= Rs. 360 thousand crores

Tax in Y7

= Rs. $\left(\frac{360 \times 33}{100}\right)$ thousand crores

= Rs. 118.8 thousand crores

**73.** (3) Profit in Y2

= Rs. (1100 – 850) thousand crores

= Rs. 250 thousand crores

Profit after tax

= Rs. $\left(250 - \frac{250 \times 22}{100}\right)$ thousand crores

= Rs. (250 – 55) thousand crores

= Rs. 195 thousand crores

Profit in Y6 = Rs. (1500-1200) thousand crores

= Rs. 300 thousand crores

Profit after tax

= Rs. $\left(300 - \frac{300 \times 30}{100}\right)$ thousand crores

= Rs. (300 – 90) thousand crores

= Rs. 210 thousand crores

Profit in Y8 = Rs. (1850 – 1400) thousand cores

= Rs. 450 thousand crores

Profit after tax

= Rs. $\left(450 - \frac{450 \times 15}{100}\right)$ thousand crores

= Rs. (450 – 67.5) thousand crores

= Rs. 332.5 thousand crores

Clearly, Y8 > Y6 > Y2

**74.** (3) Profit of year :

Year Y1 $\Rightarrow$ Rs. (800 – 600) thousand crores

= Rs. 200 thousand crores

Year Y2 $\Rightarrow$ Rs. (1100 – 850) thousand crores

= Rs. 250 thousand crores

Year Y3 $\Rightarrow$ Rs. (1200 – 900) thousand crores

= Rs. 300 thousand crores

Year Y4 $\Rightarrow$ Rs. (1200 – 950) thousand crores

= Rs. 250 thousand crores

Year Y5 $\Rightarrow$ Rs. (1350 – 1050) thousand crores

= Rs. 300 thousand crores

Year Y6 $\Rightarrow$ Rs. (1500 – 1200) thousand crores

= Rs. 300 thousand crores

Year Y7 $\Rightarrow$ Rs. (1600 – 1240) thousand crores

= Rs. 360 thousand crores

Year Y8 $\Rightarrow$ Rs. (1850 – 1400) thousand crores

= Rs. 450 thousand crores

**75.** (3) Profit after tax

Year Y1

$\Rightarrow$ Rs. $\left(200-\frac{200\times20}{100}\right)$ thousand crores

= Rs. (200 – 40) thousand crores

= Rs. 160 thousand crores

Year Y2

$\Rightarrow$ Rs. $\left(250-\frac{250\times22}{100}\right)$ thousand crores

= Rs. 195 thousand crores

Year Y3

$\Rightarrow$ Rs. $\left(300-\frac{300\times22}{100}\right)$ thousand crores

= Rs. 234 thousand crores

Year Y4

$\Rightarrow$ Rs. $\left(250-\frac{250\times25}{100}\right)$ thousand crores

= Rs. 187.5 thousand crores

Year Y5

$\Rightarrow$ Rs. $\left(300-\frac{300\times30}{100}\right)$ thousand crores

= Rs. 210 thousand crores

Year Y6

$\Rightarrow$ Rs. $\left(300-\frac{300\times30}{100}\right)$ thousand crores

= Rs. 210 thousand crores

Year Y7

$\Rightarrow$ Rs. $\left(360-\frac{360\times33}{100}\right)$ thousand crores

= Rs. 241.2 thousand crores

Year Y8

= Rs. $\left(450-\frac{450\times15}{100}\right)$ thousand crores

= Rs. 382.5 thousand crores

Total = Rs. (160 + 195 + 234 + 187.5 + 210 + 210 + 241.2 + 382.5) thousand crores

= Rs. 1820.2 thousand crores

**76.** (1) **Deals in** = to buy and sell particular goods as a business.

**Deal with** = to take action in order to achieve something or to solve a problem.
Hence, My elder son deals in... should be used here.

**77.** (1) It is preposition related error.

**Look at the sentence :**

He has been accused of robbery.
Hence, Sneha was accused of her husband's (possessive) murder..... should be used here.

**78.** (3) **Pass off** = to happen.

**79.** (3) **Few** = hardly any ; some.

**80.** (2) **Atrocity (Noun)** = an extremely cruel act; barbaric ; extremely violent or shocking act.

**Look at the sentence :**

They are on trial for committing atrocities against the civilian population.

**81.** (4) **Procrastinate (Verb)** = delay or postpone action ; put off doing something.

**Look at the sentence :**

I know I have got to deal with the problem at some point - I am just procrastinating.

**82.** (1) **Raucous (Adjective)** = making a disturbingly harsh and loud noise; strident.

**Dulcet (Adjective)** = soft and pleasant to listen to; melodious.

**Look at the sentences :**

The party was becoming rather raucous.
Last night I fell asleep listening to the dulcet sounds of soft jazz.

**83.** (3) **Predilection (Noun)** = liking ; preference.

**Enmity (Noun)** = a state of active opposition or hostility ; a feeling of hate.

**Look at the sentences :**

Ever since she was a child, she has had a predilection for spicy food.
She denied any personal enmity towards him.

**84.** (3) **A wild goose chase** = a foolish and hopeless pursuit of something unattainable ; useless search.

**Look at the sentence :**

Physicists searching for the hypothetical particle may be on a wild goose chase.

**85.** (2) **A moot point** = a matter about which there may be disagreement or confusion ; open to debate.

**Look at the sentence :**

Whether he was serious is a moot point.

**86.** (4) They appointed him (as) captain of the English team.

Generally 'as' is not used.

**87.** (3) In subjunctive mood of a verb, even a singular subject agrees with a plural verb.

**90.** (4) **Petty (Adjective)** = small and unimportant; minor.

**91.** (1) Correct Spelling is : admitted.

**Admitted** = confessed to be true).

**Look at the sentence :**

The Home Office finally admitted that several prisoners had been injured.

**94.** (1) After driving $\Rightarrow$ After being driven

**95.** (4) Said to $\Rightarrow$ suggested to
Let us go $\Rightarrow$ we should go.

❑❑❑

SET 8

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 09.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Kilometre : Metre : : Tonne : ?
(1) Litre (2) Kilogram
(3) Hours (4) Weight

**2.** In the following question, select the related letters from the given alternatives :
AGN : IOV : : BLM : ?
(1) JTU (2) KTU
(3) JUV (4) TUJ

**3.** In the following question, select the related number from the given alternatives :
9143 : 9963 : : 6731 : ?
(1) 1368 (2) 5666
(3) 8964 (4) 9694

**4.** In the following question, select the odd word from the given alternatives :
(1) Chennai (2) Daman
(3) Raipur (4) Shimla

**5.** In the following question, select the odd letter from the given alternatives :
(1) B (2) N
(3) P (4) W

**6.** In the following question, select the odd number from the given alternatives :
(1) 313 (2) 426
(3) 925 (4) 1034

**7.** Arrange the given words in the sequence in which they occur in the dictionary.
1. Ball 2. Balanced
3. Balls 4. Balance
5. Balancing
(1) 24135 (2) 42135
(3) 42513 (4) 54213

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
AG, LR, WC, HN, ?
(1) QY (2) RX
(3) SY (4) TZ

**9.** In the following question, select the missing number from the given alternatives :
13, 16, 11, 18, 9, 20, ?
(1) 3 (2) 5
(3) 6 (4) 7

**10.** Punit said to a lady, "The sister of your father's wife is my aunt". How is the lady related to Punit?
(1) Daughter
(2) Granddaughter
(3) Niece
(4) Cousin sister

**11.** There are 45 trees in a row. The lemon tree is 20th from right end. What is the rank of lemon tree from left end?
(1) 26 (2) 24
(3) 25 (4) 27

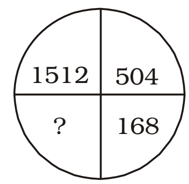
**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**UNIFORMITY**
(1) ANNUITY (2) FORUM
(3) MINT (4) UNIFORM

**13.** In a certain code language, "TIRED" is written as "56" and "BRAIN" is written as "44". How is "LAZY" written in that code language?
(1) 64 (2) 61
(3) 58 (4) 43

**14.** In the following question, by using which mathematical operator will the expression become correct?
18 ? 6 ? 9 ? 27
(1) ×, ÷ and =
(2) ÷, × and =
(3) ×, + and =
(4) +, − and =

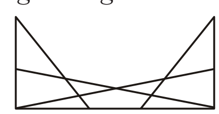
**15.** If 18 (9) 3 and 36 (30) 5, then what is the value of A in 19 (A) 18?
(1) 33 (2) 57
(3) 75 (4) 96

**16.** In the following question, sleect the number which can be placed at the sign of question mark (?) from the given alternatives.




(1) 53 (2) 56
(3) 59 (4) 66

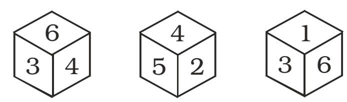
**17.** How many triangles are there in the given figure?



(1) 14 (2) 15
(3) 17 (4) 18

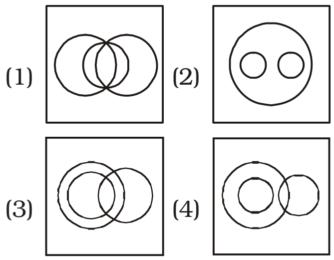
**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.
**Statements :**
I. Some pens are pencils.
II. All pencils are erasers.
**Conclusions :**
I. Some pencils are not pens.
II. Some erasers are not pens.
(1) Only Conclusion I follows.
(2) Only Conclusion II follows.
(3) Neither Conclusion I nor Conclusion II follows.
(4) Both Conclusions follow.

**19.** There positions of a cube are shown below. What will come opposite to face containing '4'?



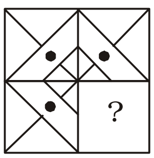

(1) 1 (2) 2
(3) 4 (4) 5

**20.** Identify the diagram that best represents the relationship among the given classes.
Music Instrument, Piano, Guitar

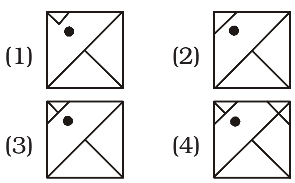


**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

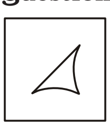


**Answer Figures :**

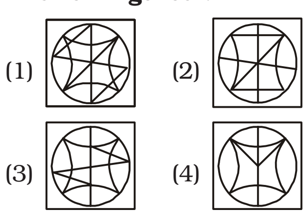


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

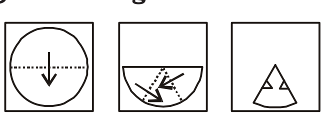


**Answer Figures :**

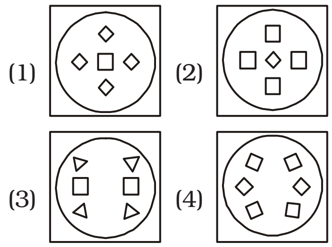


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

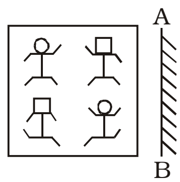


**Answer Figures :**

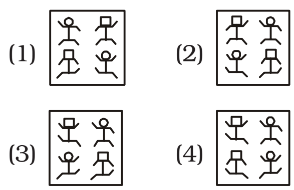


**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**



**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 10, 31 etc and 'M' can be represeted by 76, 87 etc. Similarly, you have to identify the set for the word **'SCAM'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | S | P | K | N | C |
| 1 | K | S | C | P | N |
| 2 | P | C | N | S | K |
| 3 | N | K | S | C | P |
| 4 | C | N | P | K | S |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | I | R | A | J | M |
| 6 | A | J | I | M | R |
| 7 | J | M | R | A | I |
| 8 | R | A | M | I | J |
| 9 | M | I | J | R | A |

(1) 00, 13, 57, 76
(2) 11, 04, 86, 59
(3) 23, 22, 99, 95
(4) 32, 40, 66, 68

## GENERAL AWARENESS

**26.** Who gave the 'General Equilibrium Theory'?
(1) J. M. Keynes
(2) Leon Walras
(3) David Ricardo
(4) Adam Smith

**27.** Which of the following is not true about a Demand Draft?
(1) It is an egotiable instrument.
(2) It is a banker's cheque.
(3) It may be dishon oured for lack of funds.
(4) It is issued by a bank.

**28.** Who administers the oath of the President of India?
(1) Govern or General of India
(2) Chief Justice of India
(3) Prime Minister of India
(4) Vice President of India

**29.** Who among the following gave monistic theory of sovereignty?
(1) Austin (2) Darwin
(3) Aristotle (4) Marx

**30.** Which one is the correct chronological order of the following events?
I. Quit India Movement
II. Shimla Conference
III. Poona Pact
IV. Cabinet Mis sion
(1) II, IV, I, III
(2) III, IV,II, I
(3) III, I, II, IV
(4) IV, II, III, I

**31.** In 1917, which movement was launched by Mahatma Gandhi from Champaran?
(1) Satyagraha
(2) Non co-operation movement
(3) Quit India movement
(4) Swadeshi Move ment

**32.** What is the name of the tropical cyclones in the China Sea?
(1) Hurricanes
(2) Tornado
(3) Twister
(4) Typhoon

**33.** Which among the following country is not a part of Scandinavia?
(1) Norway (2) Finland
(3) Sweden (4) Denmark

**34.** Cattle quickly swallow grass and store it in their _________.
(1) rumen
(2) esophagus
(3) small intestine
(4) salivary glands

**35.** Which of the following carries oxygen to various parts of human body?
(1) Red blood cells
(2) White blood cells
(3) Plasma
(4) Nerves

**36.** Which of the following function is performed by the kidneys in the human body?
(1) Excretion
(2) Respiration
(3) Digestion
(4) Transportation

**37.** The bending of light when it passes around a corner or a slit is due to _____.
(1) reflection
(2) refraction
(3) diffraction
(4) total internal reflection

**38.** What is the reason for formation of Mirage in desert?
(1) Refraction of light
(2) Reflection of light
(3) Total internal reflection of light
(4) Both Refraction and Total internal reflection of light

**39.** FORTRAN is not used for
I. Drawing pictures
II. Carrying out mat hematics computations
(1) Only I
(2) Only II
(3) Both I and II
(4) Neither I nor II

**40.** Which of the following bonds are weakest in nature?
(1) Single bond
(2) Double bond
(3) Triple bond
(4) Hydrogen bond

**41.** In the following reaction, fill in the blank.
Acid + Base $\rightarrow$ _______ + Water
(1) Carbondioxide
(2) Metal Oxide
(3) Hydrogen Gas
(4) Salt

**42.** Bishnoi movement was started against which of the following?
(1) Cutting of Trees
(2) Inequality of Women
(3) Killing of Animals
(4) Increasing Pollution

**43.** What is the major aim of Pradhan Mantri Ujjwala Yojana?
(1) To provide electricity
(2) To provide LED bulbs
(3) To provide LPG connections
(4) To construct village roads

**44.** Who discovered television?
(1) Michael Faraday
(2) Joseph Henry
(3) Abbe Caselli
(4) John Baird

**45.** How many players are there in a team of Volleyball?
(1) 2 (2) 4
(3) 6 (4) 5

**46.** Match the following.

| Temple | Lord |
|---|---|
| 1. Ligaraja Temple, Orissa | a. Lord Mahavir |
| 2. Tijara Mandir, Rajasthan | b. Lord Vishnu |
| 3. Venketeswara Temple, Tirupati | c. Lord Shiva |

(1) 1-b, 2- c, 3-a
(2) 1-c, 2-a, 3-b
(3) 1-a, 2-c, 3-b
(4) 1-b, 2-a, 3-c

**47.** Who among the following has been recently awarded with 'Indian of the year' award?
(1) Sunita Rani
(2) Dhiraj Singh
(3) Preety Shenoy
(4) Abhishek Kumar

**48.** Who is the author of the book titled 'Selection Day'?
(1) Aravind Adiga
(2) Anil Menon
(3) Krishna Sobti
(4) Arunava Sinha

**49.** Which of the following country is not a member of BRICS association?
(1) Brazil (2) Russia
(3) Iceland (4) China

**50.** With which of its neighbouring country India has Kalapani territorial dispute?
(1) Nepal
(2) Bangladesh
(3) Pakistan
(4) Sri Lanka

## QUANTITATIVE APTITUDE

**51.** Which value among $\sqrt[3]{5}, \sqrt[4]{6}, \sqrt[6]{12}, \sqrt[12]{276}$ is the largest?
(1) $\sqrt[3]{5}$ (2) $\sqrt[4]{6}$
(3) $\sqrt[6]{12}$ (4) $\sqrt[12]{276}$

**52.** A piece of work was finished by A, B and C together. A and B together finished 60% of the work and B and C together finished 70% of the work. Who among the three is most efficient?
(1) A (2) B
(3) C (4) A or B

**53.** Three solid spheres of radii 3 cm, 4 cm and 5 cm are melted and recast into a solid sphere. What will be the percentage decrease in the surface area?
(1) 12 (2) 14
(3) 16 (4) 28

**54.** The marked price of a sofa set is Rs. 4800 which is sold at Rs. 3672 at two successive discounts. If the first discount is 10%, then what will be the second discount (in %)?
(1) 13 (2) 14
(3) 15 (4) 17

**55.** A, B and C invested amounts in the ratio 3 : 4 : 5 respectively. If the schemes offered compound interest at the rate of 20% per annum, 15% per annum and 10% per annum respectively, then what will be the ratio of their amounts after 1 year?

(1) 3 : 15 : 25
(2) 6 : 6 : 5
(3) 36 : 46 : 55
(4) 12 : 23 : 11

**56.** The average age of 120 members of a society is 60.7 years. By addition of 30 new members, the average age becomes 56.3 years. What is the average age (in years) of newly joined members?
(1) 36.5 (2) 37.2
(3) 38.3 (4) 38.7

**57.** By selling 175 pineapples, the gain is equal to the selling price of 50 pineapples. What is the gain per cent?
(1) 28 (2) 30
(3) 32 (4) 40

**58.** If A has got 20% more marks than B, then by what per cent marks of B are less than the marks of A?
(1) 16.66 (2) 20
(3) 33.33 (4) 14.28

**59.** A train leaves Delhi at 10 a.m. and reaches Jaipur at 4 p.m. on the same day. Another train leaves Jaipur at 12 p.m. and reaches Delhi at 5 p.m. on the same day. What is the time of day (approximately) when the two trains will meet?
(1) 1 : 42 p.m. (2) 1 : 27 p.m.
(3) 2 : 04 p.m. (4) 1 : 49 p.m.

**60.** The difference between the compound interest compounding half yearly for 1 year and the simple interest for 1 year on a certain sum of money lent out at 8% per annum is Rs. 64. What is the sum (in Rs.)?
(1) 40000 (2) 42000
(3) 44000 (4) 44800

**61.** If $(x - 2)$ and $(x + 3)$ are the factors of the equation $x^2 + k_1x + k_2 = 0$, then what are the values of $k_1$ and $k_2$?
(1) $k_1 = 6, k_2 = -1$
(2) $k_1 = 1, k_2 = -6$
(3) $k_1 = 1, k_2 = 6$
(4) $k_1 = -6, k_2 = 1$

**62.** If $(x - y) = 7$, then what is the value of $(x - 15)^3 - (y - 8)^3$?
(1) 0 (2) 343
(3) 392 (4) 2863

**63.** If $x - y - \sqrt{18} = -1$ and $x + y - 3\sqrt{2} = 1$, then what is the value of $12xy(x^2 - y^2)$?
(1) 0 (2) 1
(3) $5\ 12\sqrt{2}$ (4) $612\sqrt{2}$

**64.** If $\frac{p}{q} = \frac{r}{s} = \frac{t}{u} = \sqrt{5}$, then what is the value of

$$\left[\frac{(3p^2 + 4r^2 + 5t^2)}{(3q^2 + 4s^2 + 5u^2)}\right]?$$

(1) $\frac{1}{5}$ (2) 5
(3) 25 (4) 60

**65.** In triangle ABC, a line is drawn from the vertex A to a point D on BC. If BC = 9 cm and DC = 3 cm, then what is the ratio of the areas of triangle ABD and triangle ADC respectively?
(1) 1 : 1 (2) 2 : 1
(3) 3 : 1 (4) 4 : 1

**66.** PQR is a right angled triangle in which $\angle R = 90°$. If RS $\perp$ PQ, PR = 3 cm and RQ = 4 cm, then what is the value of RS (in cm)?
(1) $\frac{12}{5}$ (2) $\frac{36}{5}$
(3) 5 (4) 2.5

**67.** In triangle PQR, A is the point of intersection of all the altitudes and B is the point of intersection of all the angle bisectors of the triangle. If $\angle$PBR = 105°, then what is the value of $\angle$PAR (in degrees)?
(1) 60 (2) 100
(3) 105 (4) 115

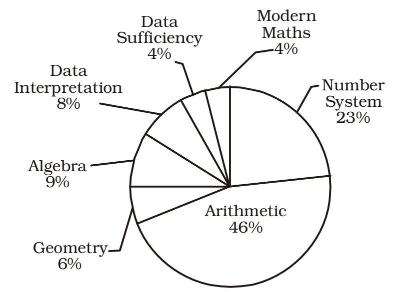
**68.** If there are four lines in a plane, then what cannot be the number of points of intersection of these lines?
(1) 0 (2) 5
(3) 4 (4) 7

**69.** What is the simplified value of cosec 2A + cot 2A?
(1) sec A (2) $\sec\left(\frac{A}{2}\right)$
(3) cot A (4) $\cot^2$ A

**70.** If A = 30°, B = 60° and C = 135°, then what is the value of $\sin^3A + \cos^3B + \tan^3C - 3\sin A \cos B \tan C$?
(1) 0 (2) 1
(3) 8 (4) 9

**71.** What is the least value of $\tan^2\theta + \cot^2\theta + \sin^2\theta + \cos^2\theta + \sec^2\theta + \text{cosec}^2\theta$?
(1) 1 (2) 3
(3) 5 (4) 7

**Directions (72–73) :** The pie chart given below shows the break-up of number of hours of teaching various subjects at an institute by Mr. Raghav.




**72.** If Mr. Raghav taught a total of 500 hours, then what is the difference in number of hours of teaching algebra and modern Maths?
(1) 15 (2) 20
(3) 25 (4) 40

**73.** Mr. Raghav taught Geometry for 36 hours. If the time taken in teaching Ratio consitutes one-fourth of the time for Arithmetic, then for how much time (in hours) did he teach the topic of Ratio?
(1) 46 (2) 51.75
(3) 69 (4) 103.5

**74.** If Data Interpretation and Modern Maths were taught for a combined time of 96 hours, then for how much time (in hours) were Number System and Geometry taught?
(1) 136 (2) 184
(3) 216 (4) 232

**75.** A new topic named Problem Solving was also introduced and it was decided that 10% time of all topics except Arithmetic will be devoted to it. What will be the central angle (in degrees) made by Problem Solving in the new pie chart?
(1) 17.28 (2) 18
(3) 19.44 (4) 36

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** If you had (1)/ told me earlier (2)/ I will help you. (3)/ No Error (4)

**77.** Her mother is (1)/ angry and (2)/ indifferent to me. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Don't loiter _____ the corridor.
(1) around (2) off
(3) of (4) at

**79.** I will scold him when _____.
(1) he will come
(2) he comes
(3) he would come
(4) he had come.

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Mellifluous**
(1) Shiver (2) Frank
(3) Immoral (4) Dulcet

**81. Dodge**
(1) Soften (2) Order
(3) Avoid (4) Chaotic

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Meretricious**
(1) Brazen (2) Natural
(3) Exemplary (4) Gaudy

**83. Nebulous**
(1) Definite (2) Inchoate
(3) Dismal (4) Sullen

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Spick and Span**
(1) High and low
(2) Dark and light
(3) Neat and clean
(4) Happy and sad

**85. To draw the longbow**
(1) To nullify
(2) To exaggerate
(3) To underrate
(4) To demarcate

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** By rescuing the child from fire, the local resident **(added another feather to his cap.)**
(1) made a significant achievement
(2) was gifted with precious thing
(3) was crowned and rewarded
(4) No improvement

**87.** The government plans to **(take up)** the construction project soon.
(1) Take on
(2) Take off
(3) Take in
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. A man devoid of kind feeling and sympathy.**
(1) Callous (2) Credulous
(3) Gullible (4) Bohemian

**89. One who eats too much**
(1) Impostor
(2) Glutton
(3) Hypochondriac
(4) Intestate

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Forfeit (2) Gorilla
(3) Blissfull (4) Corrupt

**91.** (1) Afforestation
(2) Translusent
(3) Foreigner
(4) Achievement

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. The aim must be to ensure that our country does not experience either paucity or a-surfeit of trained manpower in any specific segment of our economy.
Q. When we set about the task of higher education, we should be absolutely clear in our perception of the goals of education in the specific context of our nation's development.
R. No doubt, one of the important aims of education would be to create the required range and nature of trained manpower assessed to be needed by different sectors of national growth.
S. The entire educational apparatus must be geared progressively to fulfill the requirements of different phases of our growth in every sector primary, secondary and tertiary.
(1) SQPR (2) QRSP
(3) SRQP (4) PSQR

**93.** P. Bureaucratic cultures can smother those who want to respond to shifting conditions.
Q. Arrogant managers can overevaluate their current performance and competitive position listen poorly and learn slowly.
R. And the lack of leadership leaves no force inside these organizations to break out of the morass.
S. Inwardly focused employees can have difficulty seeing the very forces that present threats and opportunities.
(1) PRQS (2) SPQR
(3) RQPS (4) QSPR

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**She teaches us English.**

(1) English is being taught to us by her.
(2) We are taught English by her.
(3) English have been taught to us by her.
(4) We had been taught English by her.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**Nisha said to Swati, " Will you help me in my project just now?"**

(1) Nisha told Swati whether she will help her in her project just now.
(2) Nisha asked Swati if she would help her in her project just then.
(3) Nisha questioned to Swati that will you help me in my project just now.
(4) Nisha asked to Swati that will she help her in her work just now.

**Directions (96–100) :** In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

Democracy should **(96)** dignity of the individual. It should also aim at the **(97)** good of the greatest **(98)**.

The opposition party should **(99)** the wrong plans, policies and decisions of the government in power. The government should cater to the **(100)** needs of the people to make its position solid.

**96.** (1) built (2) ensure (3) keep (4) support
**97.** (1) greatest (2) smallest (3) largest (4) heaviest
**98.** (1) people (2) digit (3) number (4) individual
**99.** (1) relyon (2) against (3) support (4) oppose
**100.** (1) genuine (2) mere (3) emotional (4) luxurious

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (1) | **3.** (3) | **4.** (2) |
| **5.** (4) | **6.** (1) | **7.** (3) | **8.** (3) |
| **9.** (4) | **10.** (4) | **11.** (1) | **12.** (1) |
| **13.** (1) | **14.** (2) | **15.** (2) | **16.** (2) |
| **17.** (3) | **18.** (3) | **19.** (1) | **20.** (2) |
| **21.** (3) | **22.** (1) | **23.** (4) | **24.** (2) |
| **25.** (2) | **26.** (2) | **27.** (3) | **28.** (2) |
| **29.** (1) | **30.** (3) | **31.** (1) | **32.** (4) |
| **33.** (2) | **34.** (1) | **35.** (1) | **36.** (1) |
| **37.** (3) | **38.** (3) | **39.** (3) | **40.** (4) |
| **41.** (4) | **42.** (1) | **43.** (3) | **44.** (4) |
| **45.** (3) | **46.** (2) | **47.** (3) | **48.** (1) |
| **49.** (3) | **50.** (1) | **51.** (1) | **52.** (3) |
| **53.** (4) | **54.** (3) | **55.** (3) | **56.** (4) |
| **57.** (4) | **58.** (1) | **59.** (4) | **60.** (1) |
| **61.** (2) | **62.** (1) | **63.** (4) | **64.** (2) |
| **65.** (2) | **66.** (1) | **67.** (*) | **68.** (4) |
| **69.** (3) | **70.** (1) | **71.** (4) | **72.** (3) |
| **73.** (3) | **74.** (4) | **75.** (3) | **76.** (3) |
| **77.** (2) | **78.** (1) | **79.** (2) | **80.** (4) |
| **81.** (3) | **82.** (2) | **83.** (1) | **84.** (3) |
| **85.** (2) | **86.** (1) | **87.** (4) | **88.** (1) |
| **89.** (2) | **90.** (3) | **91.** (2) | **92.** (2) |
| **93.** (4) | **94.** (2) | **95.** (2) | **96.** (2) |
| **97.** (1) | **98.** (3) | **99.** (4) | **100.** (1) |

## EXPLANATIONS

**1.** (2) Metre and kilometer are units of length, distance etc. One thousand metres constitute a kilometre. Kilogram and tonne are units of mass. One thousand kilograms constitute a tonne.

**2.** (1)

A G N : I O V : : B L M : J T U

A +8 → I, G +8 → O, N +8 → V; B +8 → J, L +8 → T, M +8 → U

**3.** (3) 9143 ⇒ 9 + 1 + 4 + 3 = 17
9963 ⇒ 9 + 9 + 6 + 3 = 27
Similarly,
6731 ⇒ 6 + 7 + 3 + 1 = 17
8964 ⇒ 8 + 9 + 6 + 4 = 27

**4.** (2) Except Daman, all others are capitals of States of India. Daman is the capital of Union Territory of Daman and Diu.

**5.** (4) Except W, all other letters are even positioned in the English alphabetical series.
B ⇒ 2; N ⇒ 14; P ⇒ 16
But, W = 23

**6.** (1) 313 is a Prime number.

**7.** (3) Arrangement of word as per dictionary :
(4) Balance
↓
(2) Balanced
↓
(5) Balancing
↓
(1) Ball
↓
(3) Balls

**8.** (3)

A $\xrightarrow{+11}$ L $\xrightarrow{+11}$ W $\xrightarrow{+11}$ H $\xrightarrow{+11}$ [S]

G $\xrightarrow{+11}$ R $\xrightarrow{+11}$ C $\xrightarrow{+11}$ N $\xrightarrow{+11}$ [Y]

**9.** (4)

13 16 11 18 9 20 [7]

13 –2 → 11 –2 → 9 –2 → 7; 16 +2 → 18 +2 → 20

**10.** (4) Wife of lady's father means mother of lady. The sister of lady's mother is aunt of Punit and also of the lady. Therefore, the lady is (cousion) sister of Punit.

**11.** (1) Total number of trees in the row = 45
Rank of lemon tree from right end = 20
∴ Rank of lemon tree from left end = 45 – 20 + 1 = 26

**12.** (1) There is only one 'N' in the given word. Therefore, the word ANNUITY cannot be formed.

[U] N I [F O R M] I T Y ⇒ FORUM

U [N] I F O R [M I T] Y ⇒ MINT

[U N I F O R M] I T Y ⇒ UNIFORM

**13.** (1)
T I R E D
↓ ↓ ↓ ↓ ↓
20 + 9 + 18 + 5 + 4 = 56

B R A I N
↓ ↓ ↓ ↓ ↓
2 + 18 + 1 + 9 + 14 = 44

Therefore,
L A Z Y
↓ ↓ ↓ ↓
12 + 1 + 26 + 25 = 64

**14.** (2) 18 ? 6 ? 9 ? 27

$\Rightarrow$ 18 ÷ 6 × 9 = 27

$\Rightarrow$ 3 × 9 = 27

**15.** (2) 18 (9) 3

$\Rightarrow \frac{9}{18} \times 6 = 3$

36 (30) 5

$\Rightarrow \frac{30}{36} \times 6 = 5$

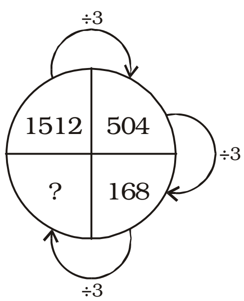
Therefore,

19 (A) 18

$\Rightarrow \frac{A}{19} \times 6 = 18$

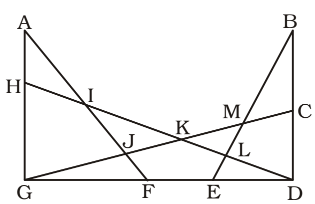
$\Rightarrow A = \frac{18 \times 19}{6} = 57$

**16.** (2) ? = 56




Therefore, ? = $\frac{168}{3}$ = 56

**17.** (3)




The Triangles are:

ΔAHI; ΔAGJ; ΔAGF; ΔJGF; ΔIJK; ΔMLK; ΔLED; ΔBCM; ΔBDL; ΔBDE; ΔKGH; ΔKDC; ΔHGD; ΔCDG; ΔKGD; ΔIFD; ΔMEG

Thus, there are 17 triangles in the given figure.

**18.** (3) First Premise is Particular Affirmative (I–type).

Second Premise is Universal Affirmative (A–type).

Some pens are pencils.

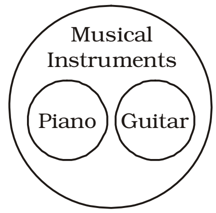
All pencils are erasers.

I + A $\Rightarrow$ I–type of Conclusion "Some pens are erasers".

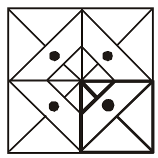
Neither Conclusion I nor Conclusion II follows.

**19.** (1) Numbers 2, 3, 5 and 6 are one the faces adjacent to 4. Therefore, '1' lies opposite '4'.

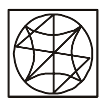
**20.** (2) Piano and Guitar are different musical instruments.



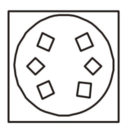

**21.** (3)



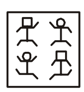
**22.** (1)



**23.** (4)



**24.** (2)



**25.** (2) S = 00, 11, 23, 32, 44

C = 04, 12, 21, 33, 40

A = 57, 65, 78, 86, 99

M = 59, 68, 76, 87, 95

| Option | S | C | A | M |
|---|---|---|---|---|
| (1) | 00 | 13 | 57 | 76 |
| (2) | 11 | 04 | 86 | 59 |
| (3) | 23 | 22 | 99 | 95 |
| (4) | 32 | 40 | 66 | 68 |

**26.** (2) General equilibrium analysis is an extensive study of a number of economic variables, their interrelations and interdependences for understanding the working of the economic system as a whole. The theory dates to the 1870s, particularly the work of French economist Léon Walras in his pioneering 1874 work Elements of Pure Economics.

**27.** (3) A demand draft, also commonly known as DD, is a kind of a pre-paid negotiable instrument used for effecting the transfer of money. A cheque may be dishonoured for lack of funds but a Demand Draft cannot be returned because it is a pre-paid instrument.

**28.** (2) According to the Constitution of India every individual assuming the role and duties of the President of the country has to take oath in the presence of Chief Justice of India or, in his absence, the seniormost Supreme Court judge.

**29.** (1) In the 19th century the theory of sovereignty as a legal concept was perfected by Austin, an English Jurist. He is regarded as a greatest exponent of Monistic Theory. To Austin in every state there exists an authority to whom a large mass of citizen show compliance. This authority is absolute, unlimited and indivisible.

**30.** (3) Poona Act-1932

Quit India Movement-1942

Shimla Conference-1945

Cabinet Mission-1946

**31.** (1) The Champaran Satyagraha of 1917, in the Champaran district of Bihar was the first Satyagraha movement inspired by Mohandas Gandhi and a major revolt in the Indian Independence Movement. Another important Satyagraha just after this revolt was Kheda Satyagraha.

**32.** (4) The tropical cyclones form over large bodies of relatively warm water, which increases the suitability of the South China Sea, Bay of Bengal and Gulf of Mexico for the formation of tropical cyclones. A typhoon is the name of a strong tropical cyclone in South China Sea.

**33.** (2) Scandinavia is a large region of northern Europe that is mainly made up of the Scandinavian Peninsula. It is generally held to consist of the two countries of the Scandinavian

Peninsula, Norway and Sweden, with the addition of Denmark.

**34.** (1) When grazing, ruminants swallow their food rapidly, sending large amounts into the largest chamber of the stomach, the rumen, where it is stored and partly digested before regurgitation and chewing when the animal is resting. Rumination is an adaption by which herbivores can spend as little time as possible feeding and then later digest their food in safer surroundings.

**35.** (1) The red blood cells carry oxygen. Red cells contain hemoglobin and it is the hemoglobin which permits them to transport oxygen (and carbon dioxide). Hemoglobin, aside from being a transport molecule, is a pigment. It gives the cells their red color.

**36.** (1) The kidneys perform the essential function of removing waste products from the blood and regulating the water fluid levels. The kidneys also make hormones. These hormones help regulate blood pressure, make red blood cells and promote bone health.

**37.** (3) Diffraction is the slight bending of light as it passes around the edge of an object. In the atmosphere, diffracted light is actually bent around atmospheric particles most commonly, the atmospheric particles are tiny water droplets found in clouds. Diffracted light can produce fringes of light, dark or colored bands.

**38.** (3) The mirage is caused by the total internal reflection of light at layers of air of different densities. In a desert, the sand is very hot during day time and a result the layer of air in contact with it gets heated up and becomes lighter. The lighter air rises up and the denser air from above comes down. As a result, the successive upper layers are denser than those below them.

**39.** (3) FORTRAN (FORmula TRANslation) is a third-generation programming language. FORTRAN provided the first programming language with a complete compiler, the software needed to translate a high level language humans could use to write software easily into assembly language or machine code computers could understand.

**40.** (4) There are three main types of bonds: ionic, covalent and metallic. A hydrogen bond is a weak type of force that forms a special type of dipole-dipole attraction which occurs when a hydrogen atom bonded to a strongly electronegative atom exists in the vicinity of another electronegative atom with a lone pair of electrons.

**41.** (4) A Salt results when an acid reacts with a base. Both are neutralised. The H+ and OH- ions combine to form water. The non metalic ions of the acid and the metal ions of the base form the salt.

**42.** (1) In 1730 AD, a small village located 26 km south-east of Jodhpur in Rajasthan witnessed probably the first and most fierce environment protection movement called Bishnoi Movemnet. The 'martyrs' in it belonged to Bishnoi community and the trees which they were protecting were 'Khejri'. In 1970s, this sacrifice became the inspiration behind the Chipko Movement.

**43.** (3) Pradhan Mantri Ujjwala Yojana is a scheme of the Ministry of Petroleum & Natural Gas for providing LPG connections to women from Below Poverty Line (BPL) households.

**44.** (4) John Baird was a Scottish engineer, innovator, one of the inventors of the mechanical television, demonstrating the first working television system on 26 January 1926, and inventor of both the first publicly demonstrated colour television system, and the first purely electronic colour television picture tube.

**45.** (3) Volleyball is a team sport in which two teams of six players are separated by a net. Each team tries to score points by grounding a ball on the other team's court under organized rules. It has been a part of the official program of the Summer Olympic Games since 1964.

**46.** (2) Temple-Lord
Lingaraja Temple, Orissa- Lord Shiva. Tijara Mandir, Rajasthan- Lord Mahavira. Venketeswara Temple, Tirupati- Lord Vishnu.

**47.** (3) Writer Preeti Shenoy was honoured with the Indian of the Year award in 2017. Shenoy's books include "It's All In The Planets", "Why We Love The Way We Do", "It Happens For A Reason", "The One You Cannot Have" and "34 Bubblegums And Candies" among others.

**48.** (1) "Selection Day" by Aravind Adiga is a cricket novel. His debut novel, The White Tiger, won the 2008 Man Booker Prize.

**49.** (3) BRICS is the acronym for an association of five major emerging national economies: Brazil, Russia, India, China and South Africa. Originally the first four were grouped as "BRIC" before the induction of South Africa in 2010.

**50.** (1) Kalapani is a region close to Nepal and the Himalayan country has been staking claim over the disputed territory for years now. Kalapani is a 35 square kilometre area in the hill state's Pithoragarh district under control of Indo Tibetan Border Police. Uttarakhand shares an 80.5-km long porous border with Nepal and a 344-km border with China. Kalapani is considered as the origin of Kali River that flows from Nepal and enters Uttarakhand.

**51.** (1) LCM of the orders of surds
= LCM of 3, 4, 6, 12 = 12

$\sqrt[3]{5} = 5^{\frac{1}{3}} = 5^{\frac{1}{3}\times\frac{4}{4}} = 5^{\frac{4}{12}}$

$= (5^4)^{\frac{1}{12}} = (625)^{\frac{1}{12}}$;

$\sqrt[4]{6} = 6^{\frac{1}{4}} = 6^{\frac{1}{4}\times\frac{3}{3}} = 6^{\frac{3}{12}}$

$= (6^3)^{\frac{1}{12}} = (216)^{\frac{1}{12}}$;

$\sqrt[6]{12} = 12^{\frac{1}{6}} = 12^{\frac{1}{6}\times\frac{2}{2}} = 12^{\frac{2}{12}}$

$= (12^2)^{\frac{1}{12}} = (144)^{\frac{1}{12}}$;

$\sqrt[12]{276} = (276)^{\frac{1}{12}}$

$\sqrt[12]{625} > \sqrt[12]{276} > \sqrt[12]{216} > \sqrt[12]{144}$

$\sqrt[3]{5} > \sqrt[12]{276} > \sqrt[4]{6} > \sqrt[6]{12}$

**52.** (3) A + B + C = 1
A + B = 0.6 ⇒ C = 1 – 0.6 = 0.4
B + C = 0.7 ⇒ A = 1 – 0.7 = 0.3
B = 1 – (0.4 + 0.3) = 1 – 0.7
= 0.3
So, C is the most efficient.

**53.** (4) Let radius of the largest sphere be R cm.
According to the question,

$\frac{4}{3}\pi R^3 = \frac{4}{3}\pi(3)^3 + \frac{4}{3}\pi(4)^3 + \frac{4}{3}\pi(5)^3$.

⇒ $R^3 = (3)^3 + (4)^3 + (5)^3$
= 27 + 64 + 125

⇒ $R^3 = 216 \Rightarrow R = \sqrt[3]{216}$
= 6 cm.
Surface area of the largest sphere
$= 4\pi(6)^2 = 144\pi$ sq. cm.
Total surface area of small spheres
$= 4\pi(3)^2 + 4\pi(4)^2 + 4\pi(5^2)$
$= 4\pi(9 + 16 + 25)$
$= 200\pi$ sq. cm.
∴ Percentage decrease

$= \frac{(200-144)\pi}{200\pi} \times 100$

$= \frac{56}{2} = 28\%$

**54.** (3) M.P. of sofa set = Rs. 4800
Its S.P. = Rs. 3672
First discount = 10%
Let second discount = $x$%
90% of (100 – $x$)% of 4800
= 3672

$\Rightarrow 4800 \times \frac{90}{100} \times \frac{100-x}{100} = 3672$

⇒ 43.2 (100 – $x$) = 3672
⇒ 4320 – 43.2$x$ = 3672
⇒ 43.2$x$ = 648

$\Rightarrow x = \frac{648}{43.2} = 15\%$

**55.** (3) Required ratio

$= 3x\left(1+\frac{20}{100}\right) : 4x\left(1+\frac{15}{100}\right) : 5x\left(1+\frac{10}{100}\right)$

$= \frac{3x\times120}{100} : \frac{4x\times115}{100} : 5x\times\frac{110}{100}$

= 360$x$ : 460$x$ : 550$x$
= 36 : 46 : 55

**56.** (4) Total age of 120 members
= 120 × 60.7 = 7284 years
Total age of 150 members
= 150 × 56.3 = 8445 years
Average age of 30 new members $= \frac{8445-7284}{30}$

$= \frac{1161}{30} = 38.7$ years

**57.** (4) Gain per cent

$= \frac{50}{175-50} \times 100$

$= \frac{50}{125} \times 100 = 40\%$

**58.** (1) A scored 20% more marks than B.

then B, scored $\frac{20}{100+20} \times 100$

$= \frac{20\times100}{120} = \frac{50}{3}$

= 16.66% less marks than A.

**59.** (4) Let both trains meet after $t$ hours from 10 O'clock.
Let distance between Delhi and Jaipur be $x$ km.
According to the question,

$\frac{x}{6} \times t + \frac{x}{5} \times (t-2) = x$

$\frac{t}{6} + \frac{t-2}{5} = 1$

$\Rightarrow \frac{5t+6t-12}{30} = 1$

⇒ 11t = 30 + 12 = 42

$\Rightarrow t = \frac{42}{11} = 3\frac{9}{11}$ hours

= 3 hours 49 minutes
Required time = 10 + 3 : 49
= 1 : 49 pm.

**60.** (1) Compounding half yearly,

Rate $= \frac{8}{2}$ = 4% per half year

Sum = Difference $\times \frac{(100)^2}{(\text{Rate})^2}$

$= 64 \times \frac{(100)^2}{(4)^2}$ = Rs. 40000

**61.** (2) Factors of $x^2 + k_1x + k_2 = 0$ are $(x - 2)$ and $(x + 3)$.
So, $x = 2$ and $x = -3$ are roots of equation.
$k_1$ = Sum of roots = 2 – 3 = –1
$k_2$ = Product of roots = 2 (–3)
= –6

**62.** (1) $x - y = 7$
⇒ $x = y + 7$
⇒ $x - 15 = y + 7 - 15$
⇒ $x - 15 = y - 8$
⇒ $(x - 15)^3 = (y - 8)^3$
⇒ $(x - 15)^3 - (y - 8)^3 = 0$

**63.** (4) $x - y - \sqrt{18} = -1$

$x - y = -1 + \sqrt{18}$

$= -1 + 3\sqrt{2}$ ...(i)

$x + y - 3\sqrt{2} = 1$

$x + y = 1 + 3\sqrt{2}$ ...(ii)

$12xy(x^2 - y^2) = ?$
Solving equations (i) and (ii),
$2x = 6\sqrt{2} \Rightarrow x = 3\sqrt{2}, y = 1$

$12xy(x^2 - y^2) = 12 \times 3\sqrt{2} \times 1$
$[(x + y)(x - y)]$

$= 36\sqrt{2}\left[(3\sqrt{2}+1)(3\sqrt{2}-1)\right]$

$= 36\sqrt{2}[18 - 1] = 36\sqrt{2} \times 17$

$= 612\sqrt{2}$

**64.** (2) $\frac{p}{q} = \frac{r}{s} = \frac{t}{u} = \sqrt{5}$

$\Rightarrow p = \sqrt{5}\,q, r = \sqrt{5}\,s,$

$t = \sqrt{5}\,u \quad \frac{3p^2+4r^2+5t^2}{3q^2+4s^2+5u^2}$

$$= \frac{3(\sqrt{5}q)^2 + 4(\sqrt{5}s)^2 + 5(\sqrt{5}4)^2}{3p^2 + 4s^2 + 5u^2}$$

$$= \frac{3 \times 3q^2 + 4 \times 5s^2 + 5 \times 5u^2}{3q^2 + 4s^2 + 5u^2}$$

$$= \frac{5(3q^2 + 4s^2 + 5s^2)}{3q^2 + 4s^2 + 5u^2} = 5$$

OR

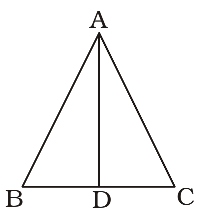
$$\frac{p}{q} = \frac{r}{s} = \frac{t}{u} = \sqrt{5}$$

$$\Rightarrow \frac{p^2}{q^2} = \frac{r^2}{s^2} = \frac{t^2}{u^2} = \frac{5}{1}$$

$$\Rightarrow \frac{3p^2}{3q^2} = \frac{4r^2}{4s^2} = \frac{5t^2}{5u^2} = \frac{5}{1}$$

$$\Rightarrow \frac{3p^2 + 4r^2 + 5t^2}{3q^2 + 4s^2 + 5u^2} = 5$$

**65.** (2)




BC = 9 cm.; DC = 3 cm.

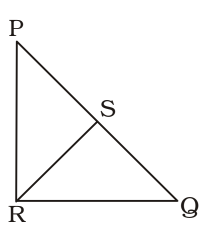
$\therefore$ BD = (9 – 3) cm. = 6 cm.

Here, heights are same.

$$\therefore \frac{\text{Area of } \Delta ABD}{\text{Area of } \Delta ADC}$$

$$= \frac{\frac{1}{2} \times BD \times h}{\frac{1}{2} \times DC \times h} = \frac{6}{3} = 2 : 1$$

**66.** (1)




In right angle triangle PQR,

$$PQ = \sqrt{PR^2 + RQ^2} = \sqrt{3^2 + 4^2}$$

$$= \sqrt{9 + 16} = \sqrt{25} = 5 \text{ cm.}$$

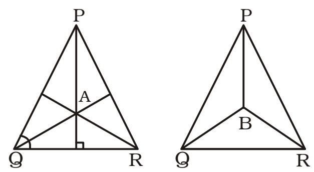
Area of $\Delta$PRQ = $\frac{1}{2}$ × RQ × PR

$= \frac{1}{2}$ PQ × RS

$\Rightarrow$ 3 × 4 = 5 × RS

$\Rightarrow$ RS = $\frac{12}{5}$ cm.

**67.** (*)




$\angle PBR = 90° + \frac{Q}{2}$

$\therefore 90° + \frac{Q}{2} = 105°$

$\Rightarrow \frac{Q}{2} = 150° – 90° = 15°$

$\Rightarrow$ Q = 30°

$\therefore$ $\angle$PAR = 180° – $\angle$PQR

= 180° – 30° = 150°

**68.** (4) Maximum number of points of intersecttions = ${}^4C_2$

$$= \frac{4!}{2!2!} = \frac{4 \times 3 \times 2!}{2!2!} = 6$$

The number of intersections cannot exceed 6.

**69.** (3) cosec 2A + cot 2A

$$= \frac{1}{\sin 2A} + \frac{\cos 2A}{\sin 2A}$$

$$= \frac{1 + \cos 2A}{\sin 2A} = \frac{2\cos^2 A}{2 \sin A \cos A}$$

$$= \frac{\cos A}{\sin A} = \cot A$$

**70.** (1) A = 30°, B = 60°, C = 135°

= $\sin^3 A + \cos^3 B + \tan^3 C – 3 \sin A \cos B \tan C$

= $\sin^3 30° + \cos^3 60° + \tan^3 135° – 3 \sin 30°. \cos 60° . \tan 135°$

$$= \left(\frac{1}{2}\right)^3 + \left(\frac{1}{2}\right)^3 + (–1)^3 – 3 \times \frac{1}{2} \times \frac{1}{2} \times (–1)$$

$$= \frac{1}{8} + \frac{1}{8} – 1 + \frac{3}{4}$$

$$= –\frac{3}{4} + \frac{3}{4} = 0$$

OR

sinA + cosB + tanC

= sin 30° + cos 60° + tan 135°

$= \frac{1}{2} + \frac{1}{2} – 1 = 0$

when $a + b + c = 0$

$\Rightarrow a^3 + b^3 + c^3 – 3abc = 0$

$\therefore$ Given expression = 0

**71.** (4) $\tan^2\theta + \cot^2\theta + \sin^2\theta + \cos^2\theta + \sec^2\theta + \text{cosec}^2\theta$

= $\sec^2\theta – 1 + \text{cosec}^2\theta – 1 + 1 + \sec^2\theta + \text{cosec}^2\theta$

= $2(\sec^2\theta + \text{cosec}^2\theta) – 1$

$$= 2\left(\frac{1}{\cos^2\theta} + \frac{1}{\sin\theta}\right) – 1$$

$$= 2\left(\frac{\sin^2\theta + \cos^2\theta}{\sin^2\theta.\cos^2\theta}\right) – 1$$

$$= 2\left(\frac{1}{\sin^2\theta.\cos^2\theta}\right) – 1$$

Minimum value of

$(\sin\theta \cdot \cos\theta)^n = \left(\frac{1}{2}\right)^n$

$\therefore$ Required minimum value

= $2 \times 2^2 – 1 = 8 – 1 = 7$

**72.** (3) Required difference

= 9% of 500 – 4% of 500

$$= \frac{500 \times 9}{100} – \frac{500 \times 4}{100}$$

= 45 – 20 = 25

**73.** (3) $\because$ 6% $\equiv$ 36 hours

$\therefore$ 100% $\equiv \frac{36}{6} \times 100$

= 600 hours

Required number of hours to teach the topic of ratio

$= \frac{1}{4}$ (46% of 600)

$$= \frac{1}{4} \times \frac{600 \times 46}{100} = 69$$

**74.** (4) Required time = $\frac{96}{12} \times 29$

= 8 × 29 = 232 hours

**75.** (3) Problem solving ⇒ 2.3 + 0.4 + 0.4 + 0.8 + 0.9 + 0.6 = 5.4

$\therefore$ Central angle = $\frac{5.4 \times 360}{100}$

= 19.44°

**76.** (3) It is past conditional and it is formed as follows :

If + subject + had + $V_3$ ... , subject + would have + $V_3$

So, is place of 'will help', use 'would have helped'.

**77.** (2) angry with → a person

angry at → a thing/remark

So, correct expression will be angry with and.....

**78.** (1) **loiter around (Phrasal verb)** = move in a slow, idle manner, making purposeless stops in the course of a trip.

**79.** (2) It is future conditional. One part contains simple future tense whereas the other part contains simple present tense.

**Look at the sentences :**

If you come to me, I shall help you.

If you work hard, you will get through the examination.

**80.** (4) **Mellifluous/dulcet (Verb)** = sweet sounding.

**Look at the sentence :**

Her low mellifluous voice sweet toned.

**Immoral (Adjective)** = bad; evil

**Shiver (Adjective)** = tremble; shake

**Frank (Adjective)** = straight–forward; candid; forthright.

**81.** (3) **Dodge/avoid (Verb)** = elude; evade

**Look at the sentence :**

The marchers had to dodge missiles thrown by loyalists.

**Soften (Verb)** = to make soft

**Order (Verb)** = instruct; command.

**Chaotic (Adjective)** = full of chaos.

**82.** (2) **Meretricious/brazen/ gaudy (Adjective)** = flashy; pretentious e.g., meretricious souvenirs for the tourist trade.

**Exemplary (Adjective)** = perfect; ideal; outstanding.

**Natural (Adjective)** = organic; pure natural food.

**83.** (1) **Nebulous (Adjective)** = indistinct; indefinite.

**Look at the sentence :**

A giant nebulous glow.

**definite (Adjective)** = certain; specific.

**Look at the sentence :**

We had no definite plans.

**dismal/sullen** = dim; dark; drab; dull; gloomy.

**inchoate** = confused or incoherent; incomplete.

**84.** (3) **neat and clean**

**Look at the sentence :**

Reena always keeps her bedroom spick and span.

**85.** (2) **to exaggerate**

**Look at the sentence :**

My uncle often drawns the longbow at the party.

**86.** (1) **made a significant achievement**

**87.** (4) **no improvement**

**take on (Phrasal verb)** = to deal with

**Look at the sentence :**

India will take on Australia tommorrow.

**take off (Phrasal verb)** = (of an aircraft) become airborne

**Look at the sentence :**

The plane took off at the stipulated time.

**take up (Phrasal verb)** = become involved in

**Look at the sentence :**

He took up tennis at the age of 11.

**take in (Phrasal verb)** = to completely understand

**Look at the sentence :**

I had to read the letter twice before I could take it all in.

**88.** (1) **Gullible/credulous (Adjective)** = naive; easily deceived.

**Bohemian (Noun)** = an unconventional person.

**89.** (2)**impostor (Noun)** = swindler; cheat

**hypochondriac (Noun)** = a person who is abnormally anxious about his health

**intestate (Adjective)** = not having made a will before one dies

**90.** (3) Correct spelling : blissful

**91.** (2) Correct spelling : translucent

**94.** (2) We are taught English by her. It is active voice of simple present tense.

Its passive voice is formed as follows :

Subject + is/am/are + $V_3$ + by + object

Here, in place of 'we' English can be made the subject in passive voice, such as

⇒ English is taught to us by her.

**95.** (2) Nisha asked Swati if she would help her in her project just then.

It is direct speech of an interrogative sentence.

Its indirect speech is formed as follows :

⇒ 'whether/if' connector is used

⇒ 'said to' changes to **asked**.

⇒ 'will' changes to **would**.

⇒ Pronouns (you, me) change to (she, her) respectively as per

$\frac{\text{SON}}{1\ 2\ 3}$

⇒ 'now' changes to **then**.

⇒ The interrogative sentence changes to the assertive sentence.

**96.** (2) **Ensure (Verb)** = make sure; make certain

**Keep (Verb)** = place; put

**Support (Verb)** = bear; brace; bolster up.

**97.** (1) **Great (Adjective)** = (of an extent, amount or intensity) considerably above average.

**98.** (3) **Number (Noun)** = a group or company of people

**99.** (4) **Oppose (Verb)** = object to; resist; take a stand against.

**rely on (Verb)** = depend.

**100.** (1) **Genuine (Adjective)** = authentic; real; actual.

**mere (Adjective)** = used for emphasizing how small or insignificant someone/something is; trifling; bare

**emotional (Adjective)** = related to emotions.

**luxurious (Adjective)** = lush; opulent

❑❑❑

SET 9

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 09.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Calendar : Date : : Index : ?
(1) Name of Author
(2) Glossary
(3) Contents
(4) Summary

**2.** In the following question, select the related number from the given alternatives :
ACOUSTIC : 91 : : RENOUNCE : ?
(1) 95 (2) 99
(3) 105 (4) 109

**3.** In the following question, select the related number from the given alternatives :
243 : 819 : : 163 : ?
(1) 487 (2) 563
(3) 572 (4) 593

**4.** In the following question, select the odd word from the given alternatives :
(1) Badminton
(2) Table Tennis
(3) Cricket
(4) Hockey

**5.** In the following question, select the odd letters from the given alternatives :
(1) ACFJ (2) RTWA
(3) NPSV (4) HJMQ

**6.** In the following question, select the odd number group from the given alternatives :
(1) (4, 16, 48)
(2) (6, 36, 90)
(3) (8, 64, 160)
(4) (12, 144, 360)

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Decollete 2. Desecrate
3. Decorous 4. Desipicable
5. Destitute
(1) 13245 (2) 15243
(3) 32451 (4) 45231

**8.** In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
*a _ bc _ a _ bcdabc _ da _ cd _*
(1) *acbddb* (2) *adbcbd*
(3) *cabddc* (4) *ddcbbc*

**9.** In the following question, select the missing number from the given alternatives :
1357, 3085, 5282, 8026, ?
(1) 9961 (2) 10441
(3) 11321 (4) 11401

**10.** 5 year hence, ratio of ages of A and B will be 7 : 5 and difference between their ages will be 4 years. What are present ages (in years) of A and B respectively?
(1) 5, 9 (2) 6, 5
(3) 9, 5 (4) 9, 6

**11.** From a point, Lokesh starts walking towards south and after walking 30 metres he turns to his right and walks 20 metres, then he turns right again and walks 30 metres. He finally turns to his left and walk 40 metres. In which direction is he with reference to the starting point?
(1) North-West
(2) East
(3) West
(4) South

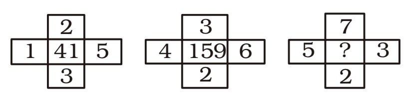
**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**ENCYCLOPEDIA**
(1) CONE (2) CYCLE
(3) NOISY (4) PEACE

**13.** In a certain code language, "RAIN" is written as "OHBQ". How is "SUMMER" written in that code language?
(1) QFLNTT (2) QDLLTR
(3) SFNNVT (4) SDNLVR

**14.** In the following question, correct the given equation by interchanging two numbers.
$8 \times 3 \div 4 + 9 - 5 = 16$
(1) 3 and 4 (2) 4 and 8
(3) 5 and 3 (4) 5 and 9

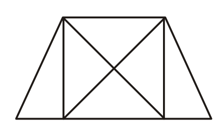
**15.** If $(2)^{\#} * 4 = 2$ and $(4)^{\#} * 4 = 16$, then what is the value of A in $(6)^{\#} * A = 18$?
(1) 12 (2) 14
(3) 16 (4) 20

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.




(1) 189 (2) 227
(3) 277 (4) 339

**17.** How many triangles are there in the given figure ?



(1) 8 (2) 10
(3) 12 (4) 14

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

**Statements :**

I. All rackets are bats.

II. All bats are wickets .

**Conclusions :**

I. Some wickets are rackets.

II. All wickets are rackets.

(1) Only Conclusion I follows.

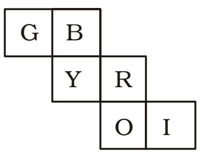
(2) Only Conclusion II follows.

(3) Neither Conclusion I nor Conclusion II follows.

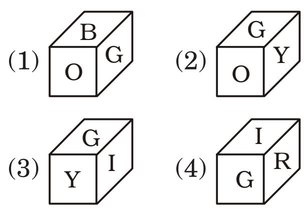
(4) Both Conclusions follow.

**19.** From the given options, which figure can be formed by folding the figure given in the question?

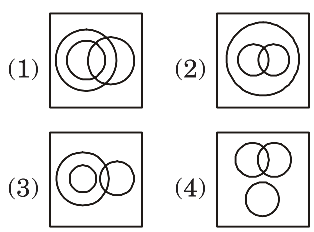
**Question Figure :**




**Answer Figures :**

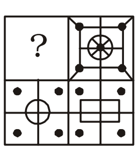


**20.** Identify the diagram that best represents the relationship among the given classes.
Staff, Manager, Worker

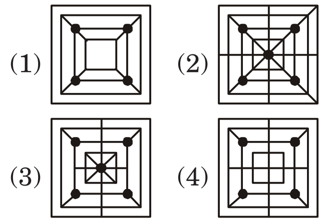


**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

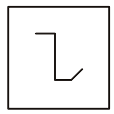


**Answer Figures :**

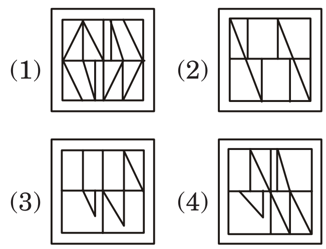


**22.** From the given aswer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

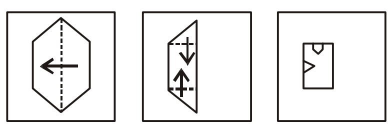


**Answer Figures :**

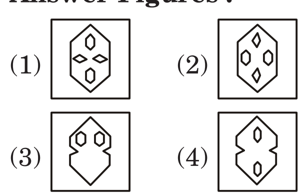


**23.** A piece of paper is folded and punnched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

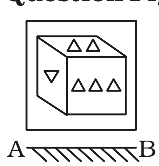


**Answer Figures :**

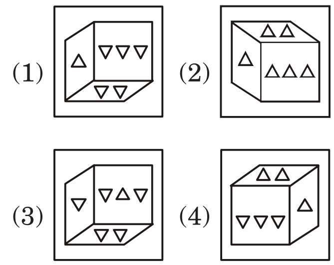


**24.** If a mirror is placed on the line AB, then which of the answer figure is the right image of the given figure ?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'X' can be represented by 21, 44 etc. and 'R' can be represented by 67, 98 etc. Similarly, you have to identify the set for the word **'CREEP'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | E | C | P | X | T |
| 1 | C | P | X | T | E |
| 2 | P | X | T | E | C |
| 3 | X | T | E | C | P |
| 4 | T | E | C | P | X |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | R | L | N | O | M |
| 6 | O | M | R | L | N |
| 7 | L | N | O | M | R |
| 8 | M | R | L | N | O |
| 9 | N | O | M | R | L |

(1) 10, 79, 23, 32, 42

(2) 24, 55, 14, 41, 12

(3) 33, 86, 32, 13, 43

(4) 42, 98, 41, 00, 34

## GENERAL AWARENESS

**26.** In which market form, a market or an industry is dominated by a single seller?
(1) Oligopoly
(2) Monopoly
(3) Duopoly
(4) Monopolistic Competition

**27.** Which one of the following is also regarded as Disguised unemployment?
(1) Under employment
(2) Frictional unemployment
(3) Seasonal unemployment
(4) Cyclical unemployment

**28.** Which of the following are constituents of Indian Parliament?
(i) The President
(ii) The Council of States (Rajya Sabha)
(iii) The House of the People (Lok Sabha )
(1) (ii) and (iii)
(2) (i) and ( ii)
(3) (i) and (iii)
(4) (i), (ii) and (iii)

**29.** Who among the following is the executive head of state in India?
(1) Prime Minister
(2) President
(3) Cabinet Secretary
(4) Finance Secretary

**30.** Who built the Konark's Sun Temple?
(1) Ananta varman Chodaganga Deva
(2) Narasimhadeva I
(3) Kapilendra Deva Routaray
(4) Purushottam Dev

**31.** Who was the first Governor General of Bengal?
(1) Robert Clive
(2) William Bentick
(3) Warren Hastings
(4) Charles Cornawallis

**32.** Amazon river flows through which of the following country?
(1) USA (2) France
(3) Brazil (4) Canada

**33.** What is the other name of Sahyadri Range?
(1) Lesser Himalayas
(2) Shivaliks
(3) Western Ghats
(4) Eastern Ghats

**34.** Who discovered bacteria?
(1) Antonie Ven Leeuwenhoek
(2) Robert Brown
(3) Robert Hook
(4) Robert Koch

**35.** What is the name of a group of similar cells performing a specific function?
(1) Tissue
(2) Organ
(3) Organ system
(4) Cellular organization

**36.** Plant tissues are of how many types?
(1) 3 (2) 2
(3) 5 (4) 6

**37.** It is difficult to fix a nail on a freely suspended wooden frame. Which law supports this statement?
(1) Law of inertia
(2) Newton's second law
(3) Newton's third law
(4) Pascal's law

**38.** Which one of the following is not a property of electromagnetic waves?
(1) Electromagnetic waves do not show interference and diffraction.
(2) Oscillating electric field and magnetic field are perpendicular to each other.
(3) Electromagnetic waves are transverse waves
(4) Electromagnetic waves do not require a medium to propagate.

**39.** What is a bug in computer terminology?
(1) A virus
(2) A program
(3) An error in program
(4) Magnetic disk storage device

**40.** A radio-active substance has a half life of six months. Three-fourth of the substance will decay in ______.
(1) Six months
(2) Ten months
(3) Twelve Months
(4) Twenty four months

**41.** pH of the human blood is
(1) Slightly Acidic
(2) Highly Acidic
(3) Slightly Basic
(4) Highly Basic

**42.** In which city is the Forest Research Institute of India located?
(1) New Delhi
(2) Hyderabad
(3) Dehradun
(4) Shimla

**43.** Deen Dayal Rasoi Yojana to provide food at only Rs. 5 has been launched on 6th April, 2017 by which state?
(1) Chhattisgarh
(2) Haryana
(3) Madhya Pradesh
(4) Uttar Pradesh

**44.** What was invented by Zacharias Jansen?
(1) Jet Engine
(2) Radium
(3) Microscope
(4) Electric Lamp

**45.** In which of the following game, ball is not used?
(1) Football
(2) Cricket
(3) Badminton
(4) Tennis

**46.** Match the following :

| **Festival** | **State** |
|---|---|
| 1. Gangaur | a. West Begal |
| 2. Gannesh Chaturthi | b. Rajasthan |
| 3. Durga Puja | c. Maharashtra |

(1) 1-b, 2- c, 3-a
(2) 1-c, 2-a, 3-b
(3) 1-b, 2-a, 3-c
(4) 1-a, 2-c, 3-b

**47.** Who has won the 'Miss Universe 2016' title?
(1) Pia Wurtzbach
(2) Iris Mittenaere
(3) Raquel Pellissier
(4) Andrea Tova

**48.** Who is the author of the book titled 'Numbers Do Lie'?
(1) Anil Menon
(2) Akash Chopra
(3) Ian Chapell
(4) Kunal Basu

**49.** Who has been appointed as the Secretary General of the United Nations in January, 2017?
(1) Ban Ki-Moon
(2) Kofi Annan
(3) Boutros- Boutros Ghali
(4) Antonio Guterres

**50.** India has longest international border with which country?
(1) Bhutan
(2) Nepal
(3) Bangladesh
(4) Pakistan

## QUANTITATIVE APTITUDE

**51.** How many numbers are there from 700 to 950 (including both) which are neither divisible by 3 nor by 7?
(1) 107 (2) 141
(3) 144 (4) 145

**52.** A can complete a work in 20 days and B can complete the same work in 25 days. If both of them work together, in 3 days what per cent of the total work will be completed?
(1) 9 (2) 12
(3) 25 (4) 27

**53.** The length of two parallel sides of a trapezium are 18 m and 24 m. If its height is 12 m, what is the area (in $m^2$) of the trapezium ?
(1) 126 (2) 252
(3) 504 (4) 1024

**54.** If two successive discounts of 50% and 10% are offered, what is the net discount (in %)?
(1) 50 (2) 55
(3) 60 (4) 65

**55.** Three bottles of equal capacity contain mixtures of milk and water in ratio 2 : 5, 3 : 4 and 4 : 5 respectively. These three bottles are emptied into a large bottle. What will be the ratio of milk and water respectively in the large bottle?
(1) 73 : 106 (2) 73 : 116
(3) 73 : 113 (4) 73 : 189

**56.** The average age of 6 members of a family is 20 years. If the age of the servant is included, the average age increases by 25%. What is the age (in years) of the servant?
(1) 30 (2) 35
(3) 50 (4) 55

**57.** For an article the profit is 190% of the cost price. If the cost price increases by 10% but the selling price remains same, then profit is what percentage of selling price (approximately)?
(1) 54 (2) 62
(3) 70 (4) 163

**58.** A, B and C are three students. A got 18% more marks than B and 12% less than C. If B got 220 marks, how much marks C has got?
(1) 230 (2) 295
(3) 240 (4) 290

**59.** Two people A and B are at a distance of 260 km from each other at 9 : 00 a.m. A immediately starts moving towards B at a speed of 25 km/h and at 11 : 00 a.m. B starts moving towards A at a speed of 10 km/hr. At what time (in p.m.) will they meet each other?
(1) 5 : 00 (2) 6 : 00
(3) 6 : 30 (4) 7 : 00

**60.** If Rs. 2500 becomes to Rs. 2970.25 in 2 years at compound interest compounded annually, what is the yearly rate of interest (in %)?
(1) 7 (2) 9
(3) 11 (4) 13

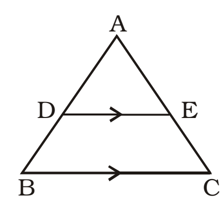
**61.** If $\left(\frac{1}{x}\right)+\left(\frac{1}{y}\right)+\left(\frac{1}{z}\right) = 0$ and $x + y + z = 9$, what is the value of $x^3 + y^3 + z^3 - 3xyz$?
(1) 81 (2) 361
(3) 729 (4) 6561

**62.** If $x^4 + \left(\frac{1}{x^4}\right) = 34$, what is the value of $x^3 - \left(\frac{1}{x^3}\right)$?
(1) 0 (2) 6
(3) 8 (4) 14

**63.** If $x = 1 - y$ and $x^2 = 2 - y^2$, what is the value of $xy$?
(1) 1 (2) 2
(3) $\frac{-1}{2}$ (4) –1

**64.** If $x + \left[\frac{1}{(x+7)}\right] = 0$, what is the value of $x - \left[\frac{1}{(x+7)}\right]$?
(1) $3\sqrt{5}$ (2) $3\sqrt{5}-7$
(3) $3\sqrt{5}+7$ (4) 8

**65.** In the given figure, DE||BC and AD : DB = 5 : 3, what is the value of (DE|BC)?




(1) $\frac{5}{8}$ (2) $\frac{2}{3}$
(3) $\frac{3}{4}$ (4) $\frac{5}{3}$

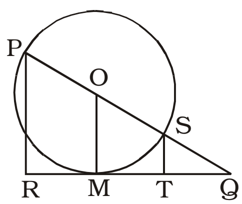
**66.** PQRS is a cyclic quadrilateral and PQ is the diameter of the circle. If ∠RPQ = 38°, what is the value (in degrees) of ∠PSR?
(1) 52 (2) 77
(3) 128 (4) 142

**67.** The smaller diagonal of a rhombus is equal to length of its sides. If length of each side is 6 cm, what is the area (in $cm^2$) of an equilateral triangle whose side is equal to the bigger diagonal of the rhombus?

(1) $18\sqrt{3}$ (2) $27\sqrt{3}$

(3) $32\sqrt{3}$ (4) $36\sqrt{3}$

**68.** In the given figure, PR and ST are perpendiculars to tangent QR. PQ passes through centre O of the circle whose diameter is 10 cm. If PR = 9 cm, what is the length (in cm.) of ST?




(1) 1 (2) 1.25

(3) 1.5 (4) 2

**69.** What is the simplified value of (sec A + cos A)(sec A – cos A)?

(1) $2\tan^2A$

(2) $2\sin^2A$

(3) $\sin^2A\tan^2A$

(4) $\sin^2A + \tan^2A$

**70.** What is the simplified value of $\left(\frac{\operatorname{cosec} A}{\cot A + \tan A}\right)^2$?

(1) $2\cos^2A$ (2) $1 - \sin^2A$

(3) $\sec^2A$ (4) $\sec A \tan A$

**71.** What is the simplified value of

$$\frac{\tan A}{1-\cot A} + \frac{\cot A}{1-\tan A} - \frac{2}{\sin 2A}?$$

(1) –1 (2) 0

(3) 1 (4) 2

**Directions (72–75) :** The table given below shows the percentage of literate people in 6 cities. This table also shows the ratio of males to females among literate people.

| City | % of literate people | Males : Females |
|---|---|---|
| 1 | 80 | 4 : 5 |
| 2 | 85 | 7 : 4 |
| 3 | 78 | 3 : 2 |
| 4 | 63 | 1 : 1 |
| 5 | 92 | 9 : 7 |
| 6 | 58 | 2 : 3 |

% of literate people of any city = (Literate people of the city/ Total population of the city) × 100

**72.** If the total population of city 4 is 600000, then how many literate people are there in city 4?

(1) 480000

(2) 378000

(3) 468000

(4) 348000

**73.** Total population of city 6 is 200000 and the total population of city 2 is 220000. What is the respective ratio of literate males of city 2 and literate females of city 6?

(1) 348 : 595

(2) 255 : 199

(3) 595 : 348

(4) 199 : 255

**74.** If there are 259210 literate females in city 5, what is the total population of city 5?

(1) 644000 (2) 354200

(3) 690000 (4) 483000

**75.** The populations of the 6 cities are 250000, 200000, 220000, 300000, 150000 and 400000 respectively. Which is the correct order of the number of literate people in these cities?

(1) City 6 > City 1 > City 4 > City 2 > City 3 > City 5

(2) City 4 > City 6 > City 1 > City 2 > City 3 > City 5

(3) City 6 > City 4 > City 1 > City 3 > City 2 > City 5

(4) City 6 > City 1 > City 4 > City 3 > City 2 > City 5

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The Tata group owns (1)/ many industries, that are spread (2)/ across the globe. (3)/ No Error (4)

**77.** She has not been (1)/ to the restaurant (2)/ much late. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** He could excel in his board exams only after _____ very hard.

(1) continuing

(2) functioning

(3) learning

(4) toiling

**79.** He _____ his camera on the table.

(1) laid (2) lain

(3) lay (4) lie

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word **similar** in meaning to the word given.

**80. Monotonous**

(1) Dull (2) Timid

(3) Unfriendly

(4) Lusty

**81. Elusive**

(1) Baffling (2) Enticing

(3) Directing (4) Soothing

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word **opposite** in meaning to the word given.

**82. Colossal**

(1) Epic (2) Rust

(3) Teeny (4) Vast

**83. Opprobrium**

(1) Adulation (2) Ignominy

(3) Mystical (4) Preclude

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. All agog**
(1) Avoid
(2) Contentment
(3) Amazed
(4) Unsystematically

**85. Not to mince matters**
(1) To be at ease
(2) To not confuse others
(3) To not interfere in others affairs
(4) To speak out politely

**Directions (86–87) :** Improve the bracketed part of each sentence.

**86.** The doctor **(has advice)** him to take proper diet.
(1) has advised
(2) had been advised
(3) was advised
(4) No improvement

**87. (Being a pleasant evening)**, we went out for a long drive on a highway.
(1) As a pleasant evening
(2) It being a pleasant evening
(3) With a pleasant evening
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. A roundabout way of speaking**
(1) Centipede
(2) Circumlocution
(3) Coercion
(4) Concentric

**89. An old unmarried woman**
(1) Masochist
(2) Septuagenarian
(3) Sniper (4) Spinster

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Autumn (2) Desperate
(3) Reciept (4) Traffic

**91.** (1) Century (2) Finance
(3) Remember
(4) Sponser

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. However, our environment also needs some help from all of us to get maintained as usual to nourish our lives forever and to never ruin our lives.
Q. It gives us all things which we need to live our life on this planet.
R. It provides us better medium to grow and develop.
S. An environment includes all the natural resources which surround us to help in number of ways.
(1) PQRS (2) QPSR
(3) SRQP (4) QSPR

**93.** P. The starting point can be the experience of a minority within society generally or even the experience of a group of people within a progressive social movement which does not live up to its progressive agenda in every respect.
Q. Within (or after) postmodernism a grand unifying theory no longer seems possible. This does not exclude the possibility or the necessity of dialogue.
R. The starting points of social criticism can be very different and the different forms of socialism never have a monopoly on Social Criticism.
S. Nevertheless most social critics still consider the Critique of capitalism to be central.
(1) PRQS (2) RPQS
(3) RQPS (4) PSRQ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**Rohan was not told about the e-mail.**
(1) Nobody told Rohan about the e-mail.
(2) Somebody did not tell Rohan about the e-mail
(3) The e-mail was not told about to Rohan.
(4) There was nobody who could tell Rohan about the e-mail.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**Ram said to Rohan, "Don't run so fast."**
(1) Ram advised Rohan don't run so fast.
(2) Ram asked Rohan why is he running so fast.
(3) Ram requested Rohan not to run so fast.
(4) Ram told Rohan not to run so fast.

**Directions (96–100) :** In the following questions, each sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

Language, they say, is the **(96)** through which human beings perceive the world. If so, English is perhaps the most **(97)** lens through which to see animals. It has **(98)** a cross eyed view of birds, beasts, fish and fowl. The very word "animal" can **(99)** the brutish and the sensual. Animal **(100)** imply baseness and vulgarity.

**96.** (1) lens (2) resource
(3) source (4) telescope

**97.** (1) distorting (2) disturbing
(3) popular (4) useful

**98.** (1) accompanied
(2) exercised
(3) perpetuated
(4) undeterred

**99.** (1) connote
(2) rectify
(3) trouble
(4) understand

**100.** (1) breeding (2) gestures
(3) instincts (4) species

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (3) | **2.** (1) | **3.** (1) | **4.** (1) |
| **5.** (3) | **6.** (1) | **7.** (1) | **8.** (2) |
| **9.** (4) | **10.** (3) | **11.** (3) | **12.** (3) |
| **13.** (4) | **14.** (3) | **15.** (1) | **16.** (3) |
| **17.** (3) | **18.** (1) | **19.** (2) | **20.** (2) |
| **21.** (3) | **22.** (1) | **23.** (3) | **24.** (1) |
| **25.** (4) | **26.** (2) | **27.** (1) | **28.** (4) |
| **29.** (2) | **30.** (2) | **31.** (3) | **32.** (3) |
| **33.** (3) | **34.** (1) | **35.** (1) | **36.** (1) |
| **37.** (3) | **38.** (1) | **39.** (3) | **40.** (3) |
| **41.** (3) | **42.** (3) | **43.** (3) | **44.** (3) |
| **45.** (3) | **46.** (1) | **47.** (2) | **48.** (2) |
| **49.** (4) | **50.** (3) | **51.** (4) | **52.** (4) |
| **53.** (2) | **54.** (2) | **55.** (2) | **56.** (4) |
| **57.** (2) | **58.** (2) | **59.** (1) | **60.** (2) |
| **61.** (3) | **62.** (4) | **63.** (3) | **64.** (2) |
| **65.** (1) | **66.** (3) | **67.** (2) | **68.** (1) |
| **69.** (4) | **70.** (2) | **71.** (3) | **72.** (2) |
| **73.** (3) | **74.** (1) | **75.** (4) | **76.** (2) |
| **77.** (3) | **78.** (4) | **79.** (1) | **80.** (1) |
| **81.** (1) | **82.** (3) | **83.** (1) | **84.** (3) |
| **85.** (4) | **86.** (1) | **87.** (2) | **88.** (2) |
| **89.** (4) | **90.** (3) | **91.** (4) | **92.** (3) |
| **93.** (2) | **94.** (1) | **95.** (4) | **96.** (1) |
| **97.** (1) | **98.** (3) | **99.** (1) | **100.** (3) |

## EXPLANATIONS

**1.** (3) We look dates in calendar. Similarly, we see contents in the Index.

**2.** (1)

A C O U S T I C
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
1 + 3 + 15 + 21 + 19 + 20 + 9 + 3

Similarly,

R E N O U N C E
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
18 + 5 + 14 + 15 + 21 + 14 + 3 + 5
= 95

**3.** (1) 2 + 4 + 3 = 9
and 8 + 1 + 9 = 18
9 + 9 = 18
Similarly,
1 + 6 + 3 = 10
and 4 + 8 + 7 = 19
10 + 9 = 19

**4.** (1) Except Badminton, all other games are played with ball and bat, stick or racket. Badminton is played with shuttle and racket.

**5.** (3)

A $\xrightarrow{+2}$ C $\xrightarrow{+3}$ F $\xrightarrow{+4}$ J
R $\xrightarrow{+2}$ T $\xrightarrow{+3}$ W $\xrightarrow{+4}$ A
H $\xrightarrow{+2}$ J $\xrightarrow{+3}$ M $\xrightarrow{+4}$ Q

But,

N $\xrightarrow{+2}$ P $\xrightarrow{+3}$ S $\xrightarrow{+3}$ V

**6.** (1) Except the number group (4, 16, 48), in all other number groups, the second number is the perfect square of the first number while the third number is two and half times of the second number.
(6, 36, 90)
$\Rightarrow 6 \times 6 = 36$ and $36 \times 2.5 = 90$
(8, 64, 160)
$\Rightarrow 8 \times 8 = 64$ and $64 \times 2.5 = 160$
(12, 144, 360)
$\Rightarrow 12 \times 12 = 144$ and $144 \times 2.5 = 360$
But,
(4, 16, 48)
$\Rightarrow 4 \times 4 = 16$ and $16 \times 3 = 48$

**7.** (1) Arrangement of words as per order in the dictionary :
1. Decollete
↓
3. Decorous
↓
2. Desecrate
↓
4. Desipicable
↓
5. Destitute

**8.** (2) *a* [a] *b c* [d] /*a* [b] *b c d*/
*a b c* [c] *d*/*a* [b] *c d* [d]

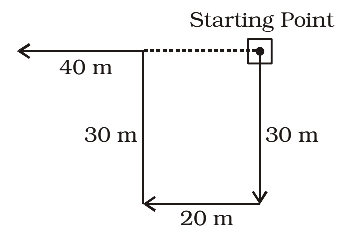
**9.** (4) 1357 + 1728 (= $12^3$) = 3085
3085 + 2197 (= $13^3$) = 5282
5282 + 2744 (= $14^3$) = 8026
8026 + 3375 (= $15^3$) = [11401]

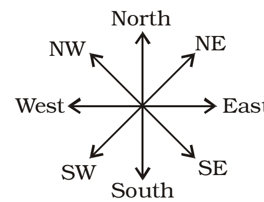
**10.** (3) Suppose the present age of A = $x$ years
Present age of B = $y$ years
According to question,

$$\frac{x+5}{y+5} = \frac{7}{5}$$

$\Rightarrow 5(x + 5) = 7(y + 5)$
$\Rightarrow 5x + 25 = 7y + 35$
$\Rightarrow 5x - 7y = 35 - 25 = 10$ ...(i)
Again, $(x + 5) - (y + 5) = 4$
$\Rightarrow x + 5 - y - 5 = 4$
$\Rightarrow x - y = 4$ ... (ii)
From equations (i) and (ii)
$x = 9$
Putting the value of $x$ in equation (ii)
$9 - y = 4$
$\Rightarrow y = 9 - 4 = 5$

**11.** (3)




It is clear from the diagram that, now Lokesh is in West direction with reference to the starting point.

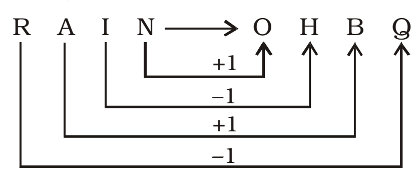
**12.** (3) There is no 'S' letter in the given word. Therefore, the word NOISY cannot be formed.

[E N C] Y C L [O] P E D I A
⇒ C O N E

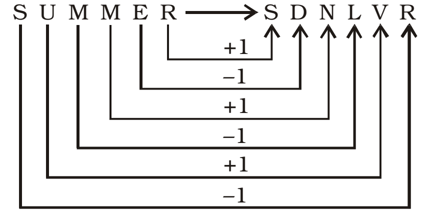
[E] N [C Y C L] O P E D I A
⇒ C Y C L E

[E] N [C] Y C L O [P E] D I [A] ⇒ P E A C E

**13.** (4)




Therefore,



**14.** (3) $8 \times 3 \div 4 + 9 - 5 = 16$

$\Rightarrow 8 \times 5 \div 4 + 9 - 3 = 16$

$\Rightarrow 8 \times \frac{5}{4} + 9 - 3 = 16$

$\Rightarrow 10 + 9 - 3 = 16$

$\Rightarrow 19 - 3 = 16$

**15.** (1) $(2)^{\#} * 4 = 2$

$\Rightarrow (2)^3 \div 4 = 2$

$\Rightarrow 8 \div 4 = 2$

$(4)^{\#} * 4 = 16$

$\Rightarrow (4)^3 \div 4 = 16$

$\Rightarrow 64 \div 4 = 16$

$(6)^{\#} * A = 18$

$\Rightarrow (6)^3 \div A = 18$

$\Rightarrow \frac{216}{A} = 18$

$\therefore A = \frac{216}{18} = \boxed{12}$

**16.** (3) First Figure

$(1 \times 2 \times 5 \times 3) + (1 + 2 + 5 + 3)$

$= 30 + 11 = 41$

Second Figure

$(4 \times 3 \times 6 \times 2) + (4 + 3 + 6 + 2)$

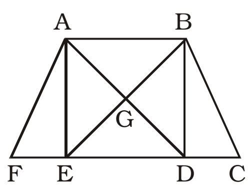
$= 144 + 15 = 159$

Third Figure

$(5 \times 7 \times 3 \times 2) + (5 + 7 + 3 + 2)$

$= 210 + 17 = \boxed{227}$

**17.** (3)




The triangles are :

ΔAEF; ΔAED; ΔAGE;
ΔAGB; ΔABD; ΔBDC;
ΔBDE; ΔBAE; ΔBGD;
ΔGED; ΔAFD; ΔBEC;

Thus, there are twelve triangles in the given figure.

**18.** (1) Both the Premises are Universal Affirmative (A–type).

All rackets are bats.

All bats are wickets.

A + A ⇒ A–type of Conclusion "All rackets are wickets".

Conclusion I is Converse of it.

**19.** (2) After folding the figure :

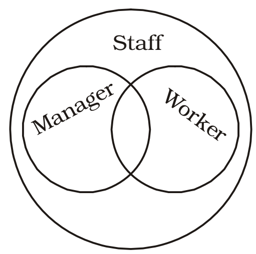
G lies opposite R. Therefore, the figure given in Option (4) cannot be formed.

B lies opposite O. Therefore, the figure given in Option (1) cannot be formed.

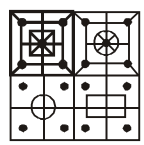
Y lies opposite I. Therefore, the figure given in Option (3) cannot be formed.

**20.** (2) Some workers may be managers and vice–versa.

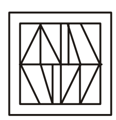
All workers and managers are staff.



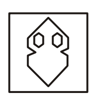

**21.** (3)



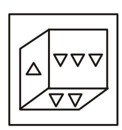
**22.** (1)



**23.** (3)



**24.** (1)



**25.** (4) C ⇒ 01, 10, 24, 33, 42

R ⇒ 55, 67, 79, 86, 98

E ⇒ 00, 14, 23, 32, 41

P ⇒ 02, 11, 20, 34, 43

| Option | C | R | E | E | P |
|---|---|---|---|---|---|
| (1) | 10 | 79 | 23 | 32 | 42 |
| (2) | 24 | 55 | 14 | 41 | 12 |
| (3) | 33 | 86 | 32 | 13 | 43 |
| (4) | 42 | 98 | 41 | 00 | 34 |

**26.** (2) Monopoly is a market structure characterized by a single seller, selling a unique product in the market. Simply, monopoly is a form of market where there is a single seller selling a particular commodity for which there are no close substitutes. A monopoly is distinguished from a monopsony, in which there is only one buyer of a product or service.

**27.** (1) Disguised unemployment exists where part of the labour force is either left without work or is working in a redundant manner where worker productivity is essentially zero. It is unemployment that does not affect aggregate output. An economy demonstrates disguised unemployment when productivity is low and too many workers are filling too few jobs.

**28.** (4) The Parliament is composed of the President of India and the two houses: the Rajya Sabha (Council of States) and the Lok Sabha (House of the People). It is the supreme legislative body of the Republic of India.

**29.** (2) The head of the executive branch is the President of India, who is also the head of state. However, unlike in the US, the President of India is not the head of government; that role is instead filled by the Prime Minister, who is chosen by the Legislative branch.

**30.** (2) The Sun Temple was built by king Narasimhadeva I of Eastern Ganga Dynasty around AD 1250. It is located at Konark in Odisha. The temple is a UNESCO World Heritage Site and has also featured on various list of Seven Wonders of India.

**31.** (3) Warren Hastings was the first Governor of the Presidency of Fort William (Bengal) from 28 April, 1772 to 20 October 1774. In 1774,he was appointed the first Governor-General of Bengal. He was also the first governor of India.

**32.** (3) Amazon river flows through the tropical forests of South America, mainly in Brazil. The Brazilians call the

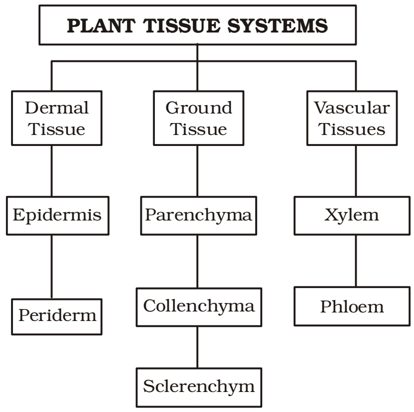
Amazon the "River Sea". Its headwaters are in the Andes Mountains in Peru, on the western edge of South America. It is the largest river in the world by the amount or volume of water it carries.

**33.** (3) The Western Ghats or Sahyadri are a mountain range that runs almost parallel to the western coast of the Indian peninsula. It extends from the Satpura Range in the north, go south past Maharashtra, Goa, through Karnataka and into Kerala and Tamil Nadu. It is one of the eight "hottest hotspots" of biological diversity in the world.

**34.** (1) Antonie van Leeuwenhoek, a Dutch scientist, discovered bacteria on 17 September, 1683. He made the discovery while using his homemade microscope to discover tiny organisms in human dental plaque. Leeuwenhoekis known as the "Father of Microbiology", and often considered to be the first acknowledged microscopist and microbiologist.

**35.** (1) A tissue is a group of similar cells that work together to perform a specific job. Tissues function to perform many tasks that are too complicated for a single cell to perform. Tissues are used for support, movement, secretion, protection, growth, and reproduction. Specialized cells form specialized tissues such as blood tissue.

**36.** (1) Plants have only three tissue types : dermal; ground; and vascular. Dermal tissue covers the outer surface of herbaceous plants and is composed of epidermal cells. The ground tissue, such as Parenchyma, collenchyma, and sclerenchyma, comprises the bulk of the primary plant body. cells are common in the ground tissue. Vascular tissue such as xylem and phloem transports food, water, hormones and minerals within the plant.




**37.** (3) It is difficult to fix a nail on a freely suspended wooden frame due to Newton's Third law of motion. When a wooden block is not resting against a support, the block and nails both move forward on being hit with a hammer. However, when the block is held firmly against a support, and the nail is hit, an equal reaction of the support drives the nail into the block.

**38.** (1) Interference usually refers to the interaction of waves that are correlated or coherent with each other, either because they come from the same source or because they have the same or nearly the same frequency. Interference effects can be observed with all types of waves, for examplesound waves, surface waves, and electromagnetic waves (e.g., light waves, etc). Similarly, Diffraction occurs with all waves, including sound waves, water waves, and electromagnetic waves such as visible light, X-rays and radio waves.

**39.** (3) In computing, a bug is an error, flaw, failure or fault in a computer program or system that causes it to produce an incorrect or unexpected result, or to behave in unintended ways. Most bugs arise from mistakes and errors made in either a program's source code or its design, or in components and operating systems used by such programs.

**40.** (3) As per the question, the half life of radioactive substance is 6 months. This means that half of the substance will disintegrate in 6 months. After the decay of the substance, only 50% of it remains. The half of the remaining substance ($\frac{1}{4}$th of the original substance) will then decay in another 6 months. So, three fourth or 75% of the substance will decay in 12 months of time.

**41.** (3) Acidity and alkalinity are expressed on the pH scale, which ranges from 0 (strongly acidic) to 14 (strongly basic or alkaline). A pH of 7.0, in the middle of this scale, is neutral. Blood is normally slightly basic, with a normal pH range of 7.35 to 7.45.

**42.** (3) The Forest Research Institute (FRI)is located in Dehradun, Uttarakhand. It is an institute of the Indian Council of Forestry Research and Education and is a premier institution in the field of forestry research in India. Established in 1906, it is one of the oldest institutions of its kind.

**43.** (3) Madhya Pradesh government, in April 2017, kick-started its ambitious 'Deendayal Rasoi Yojana' under which subsidised meals will be available at Rs. 5 per plate to people, especially the economically disadvantaged sections of society. The initiative is on the lines of Amma Canteens, started by the former Tamil Nadu chief minister J Jayalalithaa.

**44.** (3) Two Dutch spectacle makers, Hans and Zacharias Jansen are credited with inventing the first optical microscope in around 1595. Janssen is sometimes also credited for inventing the first truly compound (2 or more lens) 9x magnification optical microscope.

**45.** (3) Badminton is a racquet sport played using racquets to hit a shuttlecock across a net. The shuttlecock is a feathered or (in informal matches) plastic projectile which flies differently from the balls used in many other sports. The flight of the shuttlecock gives the sport its distinctive nature.

**46.** (1) Gangaur : one of the most important festivals of Rajasthan in which womenfolk worship Gauri, the wife of Lord Shiva during March–April; Ganesh Chaturthi: also known as Vinayaka Chaturthi, it is the main festival of Maharashtra; Durga Puja: particularly popular in West Bengal, Bihar, Odisha, Assam, Tripura, and Bangladesh.

**47.** (2) Miss France Iris Mittenaere was, on 30 January, 2017, crowned as the Miss Universe at the Mall of Asia Arena, Pasay, Metro Manila, Philippines. France's victory ended the country's 63-year title drought, the longest in Miss Universe history. Mittenaere was the first European Miss Universe in 14 years.

**48.** (2) The book *Numbers Do Lie* has been authored by has been authored by former Indian cricketer Akash Chopra along with Impact Index statistical system so that all the stories are fact based and backed by statistics.The Impact Index is a statistical system that examines every performance in a cricket match and series context.

**49.** (4) The UN General Assembly, on 13 October, 2016, appointed the former Portuguese Prime Minister António Guterres, as the next United Nations Secretary-General. Guterreswas Prime Minister of Portugal from 1995 to 2002, and the UN High Commissioner for Refugees from June 2005 to December 2015.

**50.** (3) India share longest border with Bangladesh a 4,097-kilometer (2,545-mile)-long international border, the fifth-longest land border in the world. It includes 262 km in Assam, 856 km in Tripura, 180 km in Mizoram, 443 km in Meghalaya, and 2,217 km in West Bengal.

**51.** (4) From 700 to 950 (both inclusive) number of numbers = 251

Smallest number of them divisible by 3 = 702

Largest number of them divisible by 3 = 948

Common difference = $d$ = 3

$\therefore\ t_n = a + (n - 1)d$

$\Rightarrow 948 = 702 + (n - 1)3$

$\Rightarrow (n - 1) \times 3 = 948 - 702 = 246$

$\Rightarrow n - 1 = \frac{246}{3} = 82$

$\Rightarrow n = 82 + 1 = 83$

Again, of them smallest number divisible by 7 = 707

Of them largest number divisible by 7 = 945

$\therefore$ Number of numbers divisible by 7

$= \frac{\text{Last term} - \text{first term}}{\text{Common difference}} + 1$

$= \frac{945 - 707}{7} + 1$

$= \frac{238}{7} + 1 = 34 + 1 = 35$

Similarly, number of numbers divisible by 7 and 3 i.e., 21

$= \frac{945 - 714}{21} + 1$

$= \frac{231}{21} + 1 = 12$

$\therefore$ Number of numbers divisible by either 3 or 7 or both = 83 + 35 – 12 = 106

$\therefore$ Required answer = 251 – 106 = 145

**52.** (4) (A + B)'s 1 day's work

$= \frac{1}{20} + \frac{1}{25}$

$= \frac{5 + 4}{100} = \frac{9}{100}$

$\therefore$ (A + B)'s 3 day's work

$= \frac{27}{100}$

$\therefore$ Required per cent = 27%

**53.** (2) Area of the trapezium

$= \frac{1}{2}$ (sum of parallel sides) × perpendicular distance

$= \frac{1}{2}(18 + 24) \times 12$

= 42 × 6 = 252 sq. metre

**54.** (2) Single equivalent discount

$= \left(x + y - \frac{xy}{100}\right)\%$

$= \left(50 + 10 - \frac{50 \times 10}{100}\right)\%$

= (60 – 5)% = 55%

**55.** (2) Required ratio

$= \left(\frac{2}{7} + \frac{3}{7} + \frac{4}{9}\right) : \left(\frac{5}{7} + \frac{4}{7} + \frac{5}{9}\right)$

$= \left(\frac{18 + 27 + 28}{63}\right) : \left(\frac{45 + 36 + 35}{63}\right)$

$= \frac{73}{63} : \frac{116}{63} = 73 : 116$

**56.** (4) Total age of all 6 members of family = 20 × 6 = 120 years

After including the servant, Total age of 7 members

$= \left(\frac{7 \times 20 \times 125}{100}\right)$ years

= 175 years

$\therefore$ Servant's age

= (175 – 120) years

= 55 years

**57.** (2) C.P. of article = Rs. 100

$\therefore$ Its S.P. = Rs. 290

In second case,

C.P. = Rs. 110

$\therefore$ Required profit per cent

$= \frac{290 - 110}{290} \times 100$

$= \frac{1800}{29} \approx 62\%$

**58.** (2) Let marks obtained by C be 100.

Marks obtained by A = 88

Marks obtained by B

$= \frac{100 \times 88}{118}$

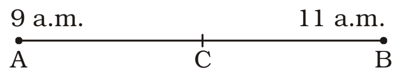
$= \frac{4400}{59}$

$B : C = \frac{4400}{59} : 100 = 44 : 59$

$\therefore$ Marks of C $= \frac{59}{44} \times 220$

$= 295$

**59.** (1)




Let A and B meet each other $t$ hours after 9 a.m.
Distance = AB = 260 km.

$\therefore\ 25 \times t + 10\,(t - 2) = 260$

$\Rightarrow 25t + 10t - 20 = 260$

$\Rightarrow 35t = 260 + 20 = 280$

$\Rightarrow t = \frac{280}{35} = 8$ hours

$\therefore$ Required time = 5 p.m.

**60.** (2) $A = P\left(1 + \frac{R}{100}\right)^T$

$\Rightarrow 2970.25 = 2500\left(1 + \frac{R}{100}\right)^2$

$\Rightarrow \frac{297025}{250000} = \left(1 + \frac{R}{100}\right)^2$

$\Rightarrow \frac{545}{500} = \left(1 + \frac{R}{100}\right)$

$\Rightarrow \frac{109}{100} = 1 + \frac{R}{100}$

$\Rightarrow \frac{R}{100} = \frac{109}{100} - 1 = \frac{9}{100}$

$\Rightarrow R = \frac{9}{100} \times 100$

= 9% per annum

**61.** (3) $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 0$

$\Rightarrow \frac{yz + zx + xy}{xyz} = 0$

$\Rightarrow xy + yz + zx = 0$ ... (i)

$\therefore\ (x + y + z)^2 = 9^2 = 81$

$\Rightarrow x^2 + y^2 + z^2 + 2\,(xy + yz + zx) = 81$

$\Rightarrow x^2 + y^2 + z^2 = 81$ ... (ii)

$\therefore\ x^3 + y^3 + z^3 - 3xyz = (x + y + z)\,(x^2 + y^2 + z^2 - xy - yz - zx)$

$= 9 \times 81 = 729$

**62.** (4) $x^4 + \frac{1}{x^4} = 34$

$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)^2 - 2 = 34$

$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)^2 = 36$

$\Rightarrow x^2 + \frac{1}{x^2} = 6$

Again, $\left(x - \frac{1}{x}\right)^2 + 2 = 6$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 = 6 - 2 = 4$

$\Rightarrow x - \frac{1}{x} = 2$

On cubing both sides,

$\left(x - \frac{1}{x}\right)^3 = 8$

$\Rightarrow x^3 - \frac{1}{x^3} - 3\left(x - \frac{1}{x}\right) = 8$

$\Rightarrow x^3 - \frac{1}{x^3} - 3 \times 2 = 8$

$\Rightarrow x^3 - \frac{1}{x^3} = 6 + 8 = 14$

**63.** (3) $x = 1 - y$ (Given)

$\therefore\ x^2 = 2 - y^2$

$\Rightarrow (1 - y)^2 = 2 - y^2$

$\Rightarrow 1 - 2y + y^2 = 2 - y^2$

$\Rightarrow 2y^2 - 2y - 1 = 0$

$\therefore\ y = \frac{2 \pm \sqrt{4 + 8}}{4}$

$\left[\text{For } ax^2 + bx + c = 0,\ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right]$

$\Rightarrow y = \frac{2 \pm \sqrt{12}}{4} = \frac{1 \pm \sqrt{3}}{2}$

When, $y = \frac{1 + \sqrt{3}}{2}$

$x = 1 - y = 1 - \frac{1 + \sqrt{3}}{2}$

$= \frac{1 - \sqrt{3}}{2}$

$\therefore\ xy = \frac{1 + \sqrt{3}}{2} \times \frac{1 - \sqrt{3}}{2}$

$= \frac{1 - 3}{4} = \frac{-2}{4} = \frac{-1}{2}$

Again, when $y = \frac{1 - \sqrt{3}}{2}$,

$x = 1 - y = 1 - \frac{1 - \sqrt{3}}{2}$

$= \frac{2 - 1 + \sqrt{3}}{2} = \frac{1 + \sqrt{3}}{2}$

$\therefore\ xy = \frac{1 + \sqrt{3}}{2} \times \frac{1 - \sqrt{3}}{2}$

$= -\frac{1}{2}$

**64.** (2) $x + \frac{1}{x + 7} = 0$ (Given)

$\Rightarrow (x + 7) + \frac{1}{(x + 7)} = 7$

On squaring both sides,

$\Rightarrow \left[(x + 7) + \frac{1}{(x + 7)}\right]^2 = 49$

$\Rightarrow \left[(x + 7) - \frac{1}{(x + 7)}\right]^2 + 4 = 49$

$\Rightarrow \left[(x + 7) - \frac{1}{(x + 7)}\right]^2$

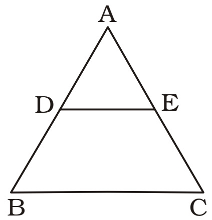
$= 49 - 4 = 45$

$\Rightarrow (x + 7) - \frac{1}{(x + 7)}$

$= \sqrt{45} = 3\sqrt{5}$

$\Rightarrow x - \frac{1}{x + 7} = 3\sqrt{5} - 7$

**65.** (1)




DE || BC

$\angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA–similarity,

$\Delta ADE \sim \Delta ABC$

$\therefore \frac{AD}{AB} = \frac{DE}{BC}$ ... (i)

$\because \frac{AD}{DB} = \frac{5}{3} \Rightarrow \frac{DB}{AD} = \frac{3}{5}$

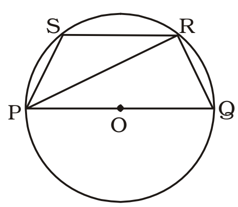
$\Rightarrow \frac{DB}{AD} + 1 = \frac{3}{5} + 1$

$\Rightarrow \frac{AB}{AD} = \frac{8}{5}$

From equation (i),

$\frac{DE}{BC} = \frac{5}{8}$

**66.** (3)




The angle in a semi-circle is right angle.

$\therefore \angle PRQ = 90°$

$\angle RPQ = 38°$

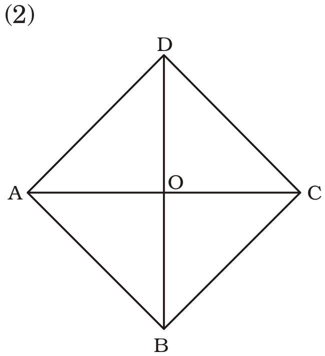
$\therefore \angle PQR = 90° - 38° = 52°$

$\because$ The sum of opposite angles of a cyclic quadrilateral is 180°.

$\therefore \angle PSR + \angle PQR = 180°$

$\Rightarrow \angle PSR = 180° - 52° = 128°$

**67.** (2)




$\angle AOB = 90°$

OA = OC

OB = OD

Let, AC = 6 cm.

$\therefore$ OA = 3 cm.

In $\Delta OAB$,

$OB = \sqrt{AB^2 - OA^2} = \sqrt{6^2 - 3^2}$

$= \sqrt{36-9} = \sqrt{27} = 3\sqrt{3}$ cm.

$\therefore$ Diagonal BD = $6\sqrt{3}$ cm

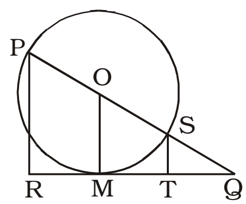
= side of the equilateral triangle

$\therefore$ Area of the equilateral triangle $= \frac{\sqrt{3}}{4} \times \left(6\sqrt{3}\right)^2$

$= \frac{\sqrt{3}}{4} \times 6\sqrt{3} \times 6\sqrt{3}$

$= 27\sqrt{3}$ sq. cm.

**68.** (1)




$PR \perp QR$; $ST \perp QR$; $OM \perp QR$

$\therefore \angle QST = \angle QOM = \angle QPR$;

$\angle QTS = \angle QMO = \angle QRP$

$\therefore$ By AA–similarity,

$\Delta QST \sim \Delta QOM \sim \Delta QPR$

$\therefore \Delta QST \sim \Delta QPR$

$\therefore \frac{SQ}{QP} = \frac{ST}{PR}$

$\Rightarrow \frac{SQ}{10+SQ} = \frac{ST}{9}$ ... (i)

$\Delta QST \sim \Delta QOM$

$\therefore \frac{SQ}{OQ} = \frac{ST}{OM}$

$\Rightarrow \frac{SQ}{5+SQ} = \frac{ST}{5}$ ... (ii)

From equations (i) and (ii),

$\frac{10+SQ}{9} = \frac{5+SQ}{5}$

$\Rightarrow 50 + 5\,SQ = 45 + 9\,SQ$

$\Rightarrow 4\,SQ = 5$

$\Rightarrow SQ = \frac{5}{4}$

From equation (i),

$\frac{\frac{5}{4}}{10+\frac{5}{4}} = \frac{ST}{9}$

$\Rightarrow \frac{5}{45} = \frac{ST}{9}$

$\Rightarrow ST = \frac{5 \times 9}{45} = 1$ cm.

**69.** (4) Expression

$= (\sec A + \cos A)(\sec A - \cos A)$

$= \sec^2 A - \cos^2 A$

$= \frac{1}{\cos^2 A} - \cos^2 A$

$= \frac{1-\cos^4 A}{\cos^2 A} = \frac{\left(1-\cos^2 A\right)\left(1+\cos^2 A\right)}{\cos^2 A}$

$= \frac{\sin^2 A + \sin^2 A \cos^2 A}{\cos^2 A}$

$= \frac{\sin^2 A}{\cos^2 A} + \frac{\sin^2 A \cos^2 A}{\cos^2 A}$

$= \tan^2 A + \sin^2 A$

**70.** (2) Expression

$= \frac{\operatorname{cosec}^2 A}{\left(\frac{\cos A}{\sin A} + \frac{\sin A}{\cos A}\right)^2}$

$= \frac{\operatorname{cosec}^2 A}{\left(\frac{\cos^2 A + \sin^2 A}{\sin A.\cos A}\right)^2}$

$= \frac{\operatorname{cosec}^2 A.\sin^2 A.\cos^2 A}{1}$

$[\because \sin A.\operatorname{cosec} A = 1]$

$= \cos^2 A = 1 - \sin^2 A$

**71.** (3) Expression

$= \frac{\frac{\sin A}{\cos A}}{1-\frac{\cos A}{\sin A}} + \frac{\frac{\cos A}{\sin A}}{1-\frac{\sin A}{\cos A}} - \frac{2}{2\sin A.\cos A}$

$= \frac{\frac{\sin A}{\cos A}}{\frac{\sin A - \cos A}{\sin A}} + \frac{\frac{\cos A}{\sin A}}{\frac{\cos A - \sin A}{\cos A}} - \frac{1}{\sin A.\cos A}$

$= \frac{\sin^2 A}{\cos A(\sin A - \cos A)}$

$- \frac{\cos^2 A}{\sin A\,(\sin A - \cos A)} - \frac{1}{\sin A.\cos A}$

$= \frac{\sin^3 A - \cos^3 A - (\sin A - \cos A)}{\sin A.\cos A.(\sin A - \cos A)}$

$= \frac{(\sin A - \cos A)\left(\sin^2 A + \cos^2 A + \sin A.\cos A\right) - (\sin A - \cos A)}{\sin A.\cos A\,.(\sin A - \cos A)}$

$= \frac{(\sin A - \cos A)\,(1 + \sin A.\cos A - 1)}{\sin A.\cos A.\,(\sin A - \cos A)}$

= 1

**72.** (2) Literate people in city–4

$= \frac{600000 \times 63}{100} = 378000$

**73.** (3) Literate males in city–2

$= 220000 \times \frac{85}{100} \times \frac{7}{11}$

= 119000

Literate females in city–6

$= 200000 \times \frac{58}{100} \times \frac{3}{5} = 69600$

∴ Required ratio
= 119000 : 69600 = 595 : 348

**74.** (1) Literate males in city–5

$= \frac{9}{7} \times 259210 = 333270$

∴ Literate population
= 333270 + 259210 = 592480

∴ Population of city–5

$= \frac{592480}{92} \times 100 = 644000$

**75.** (4) Literate population :

City–1 $\Rightarrow \frac{250000 \times 80}{100}$

= 200000

City–2 $\Rightarrow \frac{200000 \times 85}{100}$

= 170000

City–3 $\Rightarrow \frac{220000 \times 78}{100}$

= 171600

City–4 $\Rightarrow \frac{300000 \times 63}{100}$

= 189000

City–5 $\Rightarrow \frac{150000 \times 92}{100}$

= 138000

City–6 $\Rightarrow \frac{400000 \times 58}{100}$

= 232000

∴ City–6 > City–1 > City–4 > City–3 > City–2 > City–5

**76.** (2) If the sentence doesn't need the clause that the word in question is connecting **which** is used.
Hence, many industries which are spread. ..... should be used here.

**77.** (3) Very is an adverb and it modifies a verb.
Much is mainly used as an adjective.
Hence, very late... should be used here.

**78.** (4) **Toil (Verb)** = to work hard

**79.** (1) **lay (Verb)** = put something down gently or carefully.
**lay** ⇒ laid (past) ⇒ laid (past participle).

**80.** (1) **Monotonous (Adjective)** = dull; lacking in variety and interest; boring; tedious; unexciting.
**Look at the sentence :**
I love the games but training is a bit monotonous really.

**81.** (1) **Elusive (Adjective)** = difficult to find or achieve; difficult to describe or remember; baffling.
**Look at the sentence :**
The answers to these questions remain as elusive as ever.

**82.** (3) **Colossal (Adjective)** = extremely large; massive; enormous.
**Teeny (Adjective)** = tiny; very small, little; minuscule.
**Look at the sentences :**
In the centre of the hall stood a colossal wooden statue, decorated in ivory and gold.
Then for the crust, you need flour, butter, milk and a teeny bit of salt.

**83.** (1) **Opprobrium (Noun)** = harsh criticism or censure; vilification; condemnation.
**Adulation (Noun)** = excessive admiration or praise; adoration.
**Look at the sentences :**
You get nothing back but opprobrium, abuse and ostracism.
He found it difficult to cope with the adulation of the fans.

**84.** (3) **All agog** = excited; in high spirits; impressed or amazed; impatient.
**Look at the sentence :**
The audience was all agog as the speaker recounted tales of his experience as a stunt car driver.

**85.** (4) **Not to mince matters** = speak frankly; to speak out politely.
**Look at the sentence :**
Not to mince matters, I feel he should resign.

**86.** (1) Structure of sentence in Present Perfect :
Subject + has/have + $V_3$
Hence, has advised... should be used here. The past relates to the present.

**87.** (2) Here, Dummy subject should ..... be used. Hence, It being a pleasant evening... should be used.

**90.** (3) **Receipt (Noun)** = receiving; getting.

**91.** (4) **Sponsor (Noun)** = a person or organisation that contributes to the costs involved in staging an event in return for advertising.

**94.** (1) It will be a sentence in Past Simple.
No body told Rohan about the e-mail.

**95.** (4) said to ⇒ told
Don't ⇒ not to

**97.** (1) **Distort (Verb)** = misrepresent; twist; pervert.

**98.** (3) **Perpetuate (Verb)** = keep alive; maintain, continue indifinitely.

**99.** (1) **Connote (Verb)** = imply; suggest; indicate; signify certain meanings; ideas etc.

❐❐❐

**SET 10**

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 09.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word pair from the given alternatives :
Ammeter : Current : : ? : ?
(1) Scale : Speed
(2) Seismograph : Density
(3) Barometer : Mass
(4) Anemometer : Wind

**2.** In the following question, select the related letters from the given alternatives :
JPC : GMZ : : PUV : ?
(1) MRS (2) MSR
(3) MQR (4) RMS

**3.** In the following question, select the related number from the given alternatives :
5 : 130 : : 6 : ?
(1) 210 (2) 212
(3) 222 (4) 226

**4.** In the following question, select the odd word pair from the given alternatives :
(1) Quick : Fast
(2) Lazy : Slow
(3) Credible : Deceptive
(4) Exhaust : Tired

**5.** In the following question, select the odd letters from the given alternatives :
(1) CD (2) PR
(3) ST (4) WX

**6.** In the following question, select the odd number from the given alternatives :
(1) 234 (2) 345
(3) 243 (4) 432

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Globe 2. Group
3. Glitch 4. Gap
5. Glade
(1) 42351 (2) 45321
(3) 43125 (4) 45312

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series :
CEG, IKM, OQS, ?
(1) UWY (2) UYX
(3) UVY (4) TWY

**9.** In the following question, select the missing number from the given series :
7, 19, 42, 87, ?
(1) 136 (2) 176
(3) 172 (4) 216

**10.** Present age of A is 2 times the present age of B. After 8 years the B's age will be 4 times of C's present age. If C celebrated his fifth birthday 9 years ago, then what is the present age (in years) of A?
(1) 88 (2) 96
(3) 92 (4) 84

**11.** Pearl Tower is taller than Sky Tower but shorter than Unity Tower. Unity Tower and Cyber Tower are of same height. Pearl Tower is shorter than Indus Tower. Amongst the buildings, which is the second shortest?
(1) Pearl Tower
(2) Sky Tower
(3) Indus Tower
(4) Unity Tower

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
Legislator
(1) RAISE (2) GIST
(3) LEGAL (4) GREATER

**13.** In a certain code language, "MATCH" is written as "NYWYM" and "BOARD" is written as "CMDNI". How is "PRINT" written in that code language?
(1) YJLPQ (2) ZIMOR
(3) ROMIZ (4) QPLJY

**14.** If "+" denotes "divided by", "×" denotes "added to", "÷" denotes "subtracted from" and "–" denotes "multiplied by", then
54 + 162 – 18 × 12 ÷ 6 = ?
(1) 4 (2) 16
(3) 12 (4) 10

**15.** If $(3)^2$ @ 1 * 7 = 98 and $(4)^2$ @ 2 * 16 = 178, then $(5)^2$ @ 3 * 9 = ?
(1) 218 (2) 262
(3) 253 (4) 259

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives :

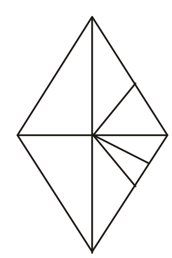
| | 3 | |
|---|---|---|
| 4 | 22 | 5 |
| | 2 | |

| | 2 | |
|---|---|---|
| 1 | 44 | 6 |
| | 7 | |

| | 7 | |
|---|---|---|
| 8 | ? | 2 |
| | 5 | |

(1) 54 (2) 60
(3) 62 (4) 66

**17.** How many triangles are there in the given figure ?

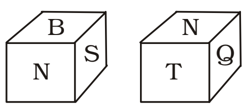


(1) 14 (2) 15
(3) 16 (4) 19

**18.** In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements.

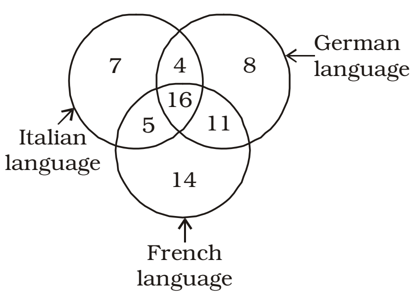
**Statements :**
All cups are plates.
No plate is a shop.
**Conclusions :**
I. No cup is a shop.
II. No shop is a plate.
(1) Only conclusion (I) follows.
(2) Only conclusion (II) follows.
(3) Both conclusions follow.
(4) Neither conclusion (I) nor conclusion (II) follows.

**19.** Two positions of a cube are shown below. What will come opposite to face containing 'B' ?



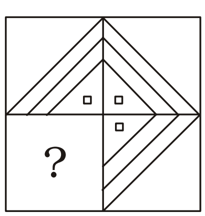

(1) Q (2) T
(3) S (4) Q or T

**20.** In the given figure, how many people speak only Italian and French language ?

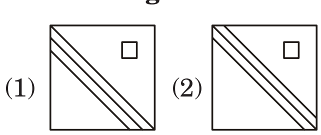


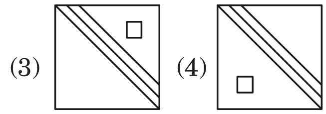

(1) 21 (2) 16
(3) 27 (4) 20

**21.** Which answer figure will complete the pattern in the question figure ?
**Question Figure :**

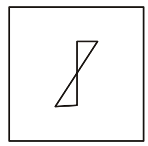



**Answer Figures :**

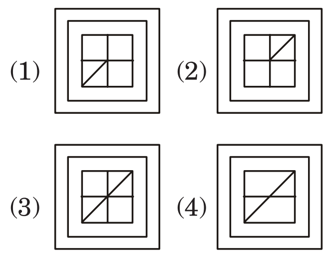


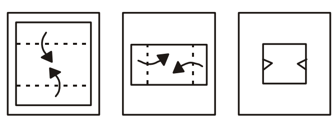

**22.** From the given answer figures, select the one in which the question figure is hidden/ embedded.
**Question Figure :**



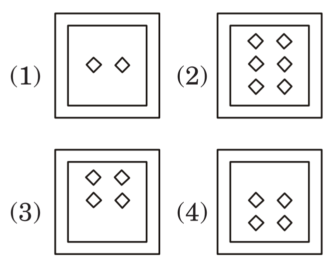
**Answer Figures :**



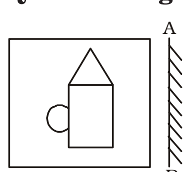

**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened ?
**Question Figures :**



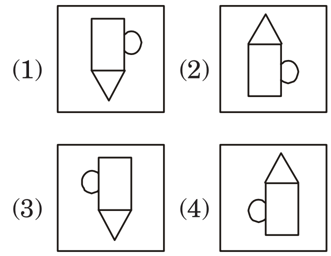
**Answer Figures :**




**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure ?
**Question Figure :**




**Answer Figures :**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrice. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'Q' can be represented by 10, 34, etc., and 'B' can be represented by 86, 79, etc. Similarly, you have to identify the set for the word "STAR".

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | P | R | T | Q | S |
| 1 | Q | S | P | R | T |
| 2 | R | T | Q | S | P |
| 3 | S | P | R | T | Q |
| 4 | T | Q | S | P | R |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | B | K | D | A | J |
| 6 | A | J | B | K | D |
| 7 | K | D | A | J | B |
| 8 | J | B | K | D | A |
| 9 | D | A | J | B | K |

(1) 42, 03, 89, 13
(2) 11, 40, 65, 02
(3) 04, 32, 96, 32
(4) 30, 21, 77, 44

## GENERAL AWARENESS

**26.** When there is only one buyer and one seller of product, it is called _____ situation.
(1) Public monopoly
(2) Bilateral monopoly
(3) Franchised monopoly
(4) Monopsony

**27.** Which among the following sponsors Regional Rural Banks (RRB'S)?
(1) Reserve Bank of India
(2) Foreign Banks
(3) National Commercial Banks
(4) Co-Operative Banks

**28.** Which of the following has the supreme command of the Indian Defence Forces?
(1) Prime Minister of India
(2) Defence Minister of India
(3) Council of Ministers of India
(4) President of India

**29.** Anti-defection law is given in which schedule of Indian constitution?
(1) Second Schedule
(2) Tenth Schedule
(3) Third Schedule
(4) Fourth Schedule

**30.** Who was the founder of Banaras Hindu University?
(1) Sukumar Dutt
(2) Madan Mohan Malvia
(3) Dr. Rajendra Prasad
(4) Motilal Nehru

**31.** The second Battle of Tarain was fought between _____.
(1) Alexander and Porus
(2) Jai Chand and Mohammed Ghori
(3) Akbar and Hemu
(4) Mohammed Ghori and Prithviraj Chauhan

**32.** Which of the following is the most abundant metal on Earth's crust?
(1) Magnesium
(2) Iron (3) Copper
(4) Aluminium

**33.** Soil having high content of aluminum and iron oxide is also known as _____.
(1) meadow soil
(2) pedalfer soil
(3) chernozen soil
(4) podzol soil

**34.** Red rot is a disease caused to which of the following plant?
(1) Paddy (2) Sugarcane
(3) Mustard (4) Wheat

**35.** Which among the following is not a connective tissue?
(1) Blood (2) Bone
(3) Skin (4) Cartilage

**36.** Which of the following microorganism causes diseases like polio and chicken pox?
(1) Bacteria (2) Protozoa
(3) Algae (4) Virus

**37.** Convex mirror is generally used in _____.
(1) solar cookers
(2) opthalmoscope
(3) reflector for head light
(4) rear view mirror

**38.** What is the SI unit of frequency?
(1) Newton (2) Watt
(3) Farad (4) Hertz

**39.** Which among the following is a 'Modifier key'?
(1) Control (2) Shift
(3) Alt
(4) All options are correct

**40.** Which of the following is an Inert Gas?
(1) Hydrogen (2) Nitrogen
(3) Oxygen (4) Argon

**41.** Ozone is an ______ of oxygen.
(1) Allotrope (2) Isotope
(3) Isobar (4) Isotone

**42.** Red data book contains data of which of the following?
(1) All plant species
(2) All animal species
(3) All endangered species
(4) All extinct species

**43.** Union Cabinet approves amendments in M–SIPS to attract investment in electronics manufacturing. What is the full form of M-SIPS?
(1) Modified Sustainable Investment Package Scheme
(2) Modified Special Information Package Scheme
(3) Modified Special Incentive Package Scheme
(4) Modern Socialist Incentive Package Scheme

**44.** Who was the invertor of frozen foods?
(1) Alfred Nobel
(2) Clarence Birdseye
(3) Frank Whittle
(4) Ives McGaffey

**45.** Match the following :

| **Term** | **Sport** |
|---|---|
| 1. Birdie | a. Tennis |
| 2. Volley | b. Cricket |
| 3. Hit wicket | c. Golf |

(1) 1–b, 2–c, 3–a
(2) 1–c, 2–a, 3–b
(3) 1–a, 2–c, 3–b
(4) 1–c, 2–b, 3–a

**46.** The Mosque with "shaking minarets" is situated in which Indian city?
(1) Kanpur
(2) Ahmedabad
(3) Jaipur
(4) Ranchi

**47.** Who among the following was awarded with Padma Shri 2017 in the field of 'Culinary'?
(1) Sanjeev Kapoor
(2) Vikas Khanna
(3) Ranveer Brar
(4) Kunal Kapur

**48.** 'The World Outside My Window' is written by which author?
(1) Emily Bronte
(2) Ruskin Bond
(3) I. Jan Austen
(4) Henry Fielding

**49.** Due to increased weapon launching missions of North Korea, which country has launched a spy satellite to monitor it?
(1) South Korea
(2) USA
(3) China
(4) Japan

**50.** With which of the following country, India has a land dispute near Tawang?
(1) Pakistan
(2) China
(3) Afghanistan
(4) Bangladesh

## QUANTITATIVE APTITUDE

**51.** How many times the keys of a typewriter have to be pressed in order to write numbers from 121 to 1346?
(1) 3675 (2) 4018
(3) 4021 (4) 4025

**52.** Sandy and Mandy do $\left(\frac{8}{13}\right)$th part of a work and the rest of the work was completed by Andy. If Sandy, Mandy and Andy take the same work for Rs. 2600, then what is the share (in Rs.) of Andy?
(1) 1600 (2) 1400
(3) 800 (4) 1000

**53.** A solid cone of height 24 cm and having radius of base 8 cm is melted to form a solid cylinder of radius 6 cm and height 6 cm. In the whole process what per cent of material is wasted?
(1) 48.5 (2) 37.5
(3) 57.8 (4) 64

**54.** If two successive discounts of 20% and 30% are given, what is the net discount (in %)?
(1) 40 (2) 44
(3) 56 (4) 60

**55.** In what ratio sugar at Rs. 30 per kg should be mixed with sugar at Rs. 45 per kg so that on selling the mixture at Rs. 42 per kg there is a profit of 20%?
(1) 2 : 1 (2) 2 : 3
(3) 5 : 2 (4) 3 : 7

**56.** The average of 11 numbers is 7. If every number is doubled, what will be the new average of the numbers?
(1) 3.5 (2) 7
(3) 10.5 (4) 14

**57.** A trader sold an article at profit of 20%. Had he bought that article at 60% less price and sold it at Rs. 90 less, he would have gained 50%. What is the value (in Rs.) of cost price?
(1) 150 (2) 200
(3) 250 (4) 300

**58.** Amit donated 20% of his income to a school and deposited 20% of the remainder in his bank. If he has Rs. 12800 now, what is the income (in Rs.) of Amit?
(1) 18000 (2) 20000
(3) 24000 (4) 32000

**59.** Two trains are moving in the opposite directions at speeds of 43 km/h and 51 km/h respectively. The time taken by the slower train to cross a man sitting in the faster train is 9 seconds. What is the length (in metre) of the slower train?
(1) 235 (2) 338.4
(3) 470 (4) 940

**60.** A certain sum of money amounts to Rs. 918 in 2 years and Rs. 969 in 3.5 years at simple interest. What is the rate of interest (in % per annum)?
(1) 4 (2) 5
(3) 6 (4) 8

**61.** If $4^{(x+y)} = 256$ and $(256)^{(x-y)} = 4$, what are the values of $x$ and $y$?
(1) $\frac{17}{8}, \frac{15}{8}$ (2) $\frac{17}{4}, \frac{15}{4}$
(3) $\frac{9}{17}, \frac{15}{17}$ (4) $\frac{8}{17}, \frac{8}{15}$

**62.** If the expression $px^3 - qx^2 - 7x - 6$ is completely divisible by $x^2 - x - 6$, what are the values of $p$ and $q$ respectively?
(1) 0, 1 (2) 1, 0
(3) 2, 1 (4) 1, 2

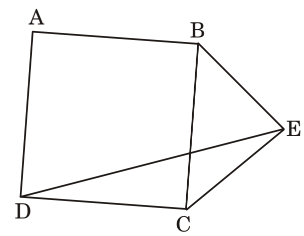
**63.** If the expression $px^3 - 2x^2 - qx + 18$ is completely divisible by $(x^2 - 9)$, what are the ratio between $p$ and $q$ respectively?
(1) 1 : 9 (2) 1 : 3
(3) 3 : 1 (4) 9 : 1

**64.** If $\left(x + \frac{1}{x}\right) = 5$, what is the value of $\left(x^5 + \frac{1}{x^5}\right)$?
(1) 1875 (2) 2525
(3) 2530 (4) 3120

**65.** In triangle ABC, ∠ABC = 90°. BP is drawn perpendicular to AC. If ∠BAP = 50°, what is the value (in degree) of ∠PBC?
(1) 30 (2) 45
(3) 50 (4) 60

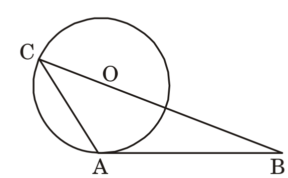
**66.** In triangle PQR, the sides PQ and PR are produced to A and B respectively. The bisectors of ∠AQR and ∠BRQ intersect at point O. If ∠QOR = 50°, what is the value (in degree) of ∠QPR?
(1) 50 (2) 60
(3) 80 (4) 100

**67.** In the given figure, ABCD is a rhombos and BCE is an isosceles triangle, with BC = CE, ∠CBE = 84° and ∠ADC = 78°. What is the value (in degree) of ∠DEC ?




(1) 20 (2) 28
(3) 33 (4) 36

**68.** In the given figure, triangle ABC is drawn such that AB is tangent to a circle at A whose radius is 10 cm and BC passes through centre of the circle. Point C lies on the circle. If BC = 36 cm and AB = 24cm, then what is the area (in $cm^2$) of triangle ABC?




(1) 134.5 (2) 148
(3) 168 (4) 180

**69.** What is the simplified value of $\left(\frac{2}{\cot\frac{A}{2} + \tan\frac{A}{2}}\right)$?

(1) sin A (2) $\cos\frac{A}{2}$

(3) $\cos^2 A$ (4) $2\sin\frac{A}{2}$

**70.** What is the simplified value of $\left(\frac{1}{\sec A + \tan A}\right)^2$?

(1) secA + tanA

(2) sinA cosA

(3) $\frac{(1 - \sin A)}{(1 + \sin A)}$

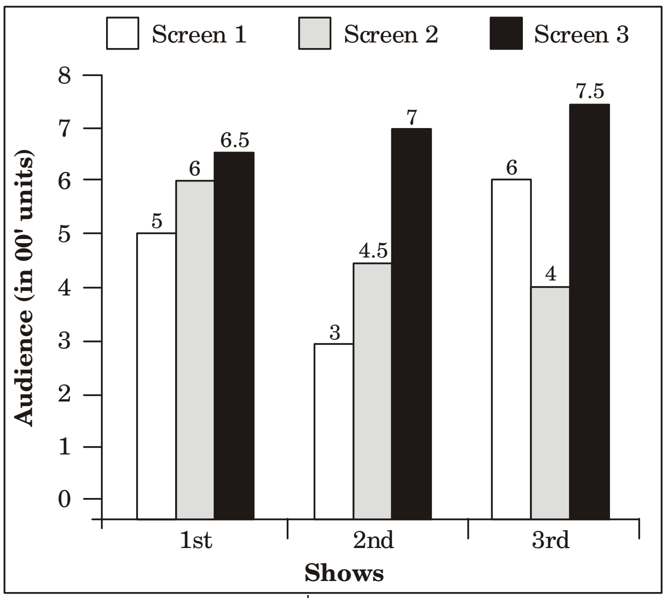
(4) $\frac{(1 - \cos A)}{(1 + \cos A)}$

**71.** What is the simplified value of $(\text{cosec}^4 A - \cot^2 A) - (\cot^4 A + \text{cosec}^2 A)$?

(1) 0 (2) 5

(3) 6 (4) 9

**Directions (72–75) :** The bar chart given below shows the number of audience in a multiscreen theatre for three shows.




**72.** What is the percentage increase in the number of audience in Screen 1 from second show to third show?

(1) 50 (2) 100

(3) 120 (4) 150

**73.** For the second show the number of audience in Screen 3 is how much more than the number of audience in Screen 1 ?

(1) 500 (2) 350

(3) 400 (4) 450

**74.** What is the percentage increase in the total number of audience from second show to third show?

(1) 20.69 (2) 25.13

(3) 22.24 (4) 18.15

**75.** If the tickets for Screen 1, Screen 2 and Screen 3 are Rs. 350, Rs. 300 and Rs. 250 respectively, then which screen has the maximum total revenue for three shows?

(1) Screen 1

(2) Screen 1 and Screen 3

(3) Screen 2 (4) Screen 3



## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of a sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** My brother finds it difficult (1)/ to pass away the time (2)/ at our grandparent's house. (3)/ No Error (4)

**77.** No sooner had he finished (1)/ his morning walk (2)/ when it began to rain. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** _____ you work hard, you cannot succeed.

(1) If (2) Till

(3) Until (4) Unless

**79.** Corruption is a standing hindrance _____ the nation's development.

(1) of (2) over

(3) to (4) upon

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word **similar** in meaning to the word given.

**80. Lethargy**

(1) Activity (2) Drowsy

(3) Modest (4) Pleasure

**81. Hoodwink**

(1) Defraud (2) Illicit

(3) Secret (4) Stare

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word **opposite** in meaning to the word given.

**82. Multifaceted**

(1) Adroit (2) Handy

(3) Pliable (4) Simple

**83. Trepidation**

(1) Bold (2) Calm

(3) Fear (4) Violent

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Kick the bucket**
(1) Loose temper
(2) To delay a little longer
(3) To die
(4) To meet with an accident

**85. An axe to grind**
(1) To act bravely
(2) To act like a fool
(3) To have a selfish motive
(4) To take risk

**Directions (86–87) :** Improve the bracketed part of each sentence.

**86.** We **(are looking forward for)** a positive response from you.
(1) are looking forward to
(2) have been looking forward at
(3) should look forward at
(4) No improvement

**87.** He **(promised to mend)** his ways.
(1) had a promised to mending
(2) promised for mending
(3) was promised of mending
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. One who is determined to take full revenge for wrongs done to him.**
(1) Enmity (2) Nigger
(3) Pedantic (4) Vindictive

**89. Just punishment for wrong doing**
(1) Dandy (2) Nemesis
(3) Prodigy (4) Wagon

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Continuous
(2) Glamoros
(3) Meticulous
(4) Vicious

**91.** (1) Secondary
(2) Sizable
(3) Succumb
(4) Sustanence

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. To those who have known comfort, discomfort is a real torture.
Q. Comfort is now one of the causes of its own spread.
R. The more comfort is brought into the world, the more it is likely to be valued.
S. It has now become a physical habit, a fashion, an ideal to be pursued for its own sake.
(1) QRSP (2) QPRS
(3) QPSR (4) QSRP

**93.** P. In that frame of mind, we have little sense of identity, safety or security.
Q. Courage is required to explore our secret life because we must first withdraw from the social mirror, where we are fed positive and negative feedback continuously.
S. As we get used to this social feedback, it becomes a comfort zone.
R. And we may opt to avoid self examination and idle away our time in a vacuum of reverie and rationalization.
(1) QSRP (2) QRSP
(3) SQRP (4) SRQP

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**The kids were laughing at the old lady.**
(1) The old lady is laughing at the kids.
(2) The old lady was being laughed at by the kids.
(3) The old lady was being laughed by the kids.
(4) The old lady was laughed at by the kids.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**"Do you want some more chocolates?" asked my cousin.**
(1) My cousin asked me if I want some more chocolates.
(2) My cousin said to me if I wanted some more chocolates.
(3) My cousin asked me that I wanted some more chocolates.
(4) My cousin asked me whether I wanted some more chocolates.

**Directions (96–100) :** In the following questions, the sentences given with blanks are to be filled in with an appropriate word(s). Select the correct alternative out of the four.

An independent, able and upright judiciary is the hallmark of a free **(96)** country therefore, the process of judicial appointment is of **(97)** importance. At present on account of the Supreme Court's last advisory opinion, the **(98)** of the executive and its interference in the appointment of judges is **(99)** which in light of previous is most **(100)**.

**96.** (1) autocratic
(2) democratic
(3) liberal
(4) participative

**97.** (1) mere (2) mourn
(3) social (4) vital

**98.** (1) career (2) future
(3) role (4) plight

**99.** (1) maximum (2) minimal
(3) negotiable
(4) reasonable

**100.** (1) adhered (2) neglected
(3) rejected (4) welcomed

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (1) | **3.** (3) | **4.** (3) |
| **5.** (2) | **6.** (2) | **7.** (4) | **8.** (1) |
| **9.** (2) | **10.** (2) | **11.** (1) | **12.** (4) |
| **13.** (4) | **14.** (3) | **15.** (2) | **16.** (4) |
| **17.** (2) | **18.** (3) | **19.** (1) | **20.** (1) |
| **21.** (3) | **22.** (3) | **23.** (2) | **24.** (2) |
| **25.** (4) | **26.** (2) | **27.** (3) | **28.** (4) |
| **29.** (2) | **30.** (2) | **31.** (4) | **32.** (4) |
| **33.** (2) | **34.** (2) | **35.** (3) | **36.** (4) |
| **37.** (4) | **38.** (4) | **39.** (4) | **40.** (4) |
| **41.** (1) | **42.** (3) | **43.** (3) | **44.** (2) |
| **45.** (2) | **46.** (2) | **47.** (1) | **48.** (2) |
| **49.** (4) | **50.** (2) | **51.** (4) | **52.** (4) |
| **53.** (3) | **54.** (2) | **55.** (1) | **56.** (4) |
| **57.** (1) | **58.** (2) | **59.** (1) | **60.** (1) |
| **61.** (1) | **62.** (2) | **63.** (1) | **64.** (2) |
| **65.** (3) | **66.** (3) | **67.** (3) | **68.** (3) |
| **69.** (1) | **70.** (3) | **71.** (1) | **72.** (2) |
| **73.** (3) | **74.** (1) | **75.** (4) | **76.** (2) |
| **77.** (3) | **78.** (4) | **79.** (3) | **80.** (2) |
| **81.** (1) | **82.** (4) | **83.** (2) | **84.** (3) |
| **85.** (3) | **86.** (1) | **87.** (4) | **88.** (4) |
| **89.** (2) | **90.** (2) | **91.** (4) | **92.** (4) |
| **93.** (1) | **94.** (2) | **95.** (4) | **96.** (2) |
| **97.** (4) | **98.** (3) | **99.** (2) | **100.** (4) |

## EXPLANATIONS

**1.** (4) The first is used to measure the second. Ammeter is an instrument to measure the strength of an electric current. Similarly, Anemometer is an instrument to measure the velocity and direction of wind.

**2.** (1) J P C ⟶ G M Z (each letter −3)

Similarly,

P U V ⟶ M R S (each letter −3)

**3.** (3) $5 \Rightarrow (5)^3 + 5$
$= 125 + 5 = 130$
Similarly,
$6 \Rightarrow (6)^3 + 6$
$= 216 + 6 = 222$

**4.** (3) Except Credible : Deceptive pair, in all other pairs both the words are synonymous to each other. Credible is the antonym of Deceptive.

**5.** (2) C $\xrightarrow{+1}$ D
S $\xrightarrow{+1}$ T
W $\xrightarrow{+1}$ X
But,
P $\xrightarrow{+2}$ R

**6.** (2) Except the number 345, all other numbers are made up of the same three digits : 2, 3 and 4.

**7.** (4) Arrangement of words as per order in the dictionary :
4. Gap
↓
5. Glade
↓
3. Glitch
↓
1. Globe
↓
2. Group

**8.** (1)
C $\xrightarrow{+6}$ I $\xrightarrow{+6}$ O $\xrightarrow{+6}$ U
E $\xrightarrow{+6}$ K $\xrightarrow{+6}$ Q $\xrightarrow{+6}$ W
G $\xrightarrow{+6}$ M $\xrightarrow{+6}$ S $\xrightarrow{+6}$ Y

**9.** (2) $7 \times 2 + 5 = 19$
$19 \times 2 + 4 = 42$
$42 \times 2 + 3 = 87$
$87 \times 2 + 2 = \boxed{176}$

**10.** (2) Suppose the present age of B = $x$ years
Therefore, the present age of A = $2x$ years
Present age of C = 5 + 9
= 14 years
According to question
$x + 8 = 14 \times 4$
$\Rightarrow x = 56 - 8 = 48$
$\therefore$ Present age of A = $2x$
$= 2 \times 48 = 96$ years

**11.** (1) Unity Tower > Pearl Tower > Sky Tower
Unity Tower = Cyber Tower
Indus Tower > Pearl Tower
Unity Tower = Cyber Tower > Indus Tower > Pearl Tower > Sky Tower
Clearly, Pear Tower is the second shortest.

**12.** (4) There are only one 'E' and 'R' in the given word. Therefore, the word GREATER cannot be formed.

L [E] G [IS] L [A] T O [R]
⇒ RAISE

L E [G I S] L A [T] O R
⇒ GIST

[L E G] I S [L A] T O R
⇒ LEGAL

**13.** (4)
M A T C H ⟶ N Y W Y M (+1, −2, +3, −4, +5)

B O A R D ⟶ C M D N I (+1, −2, +3, −4, +5)

Therefore,

P R I N T ⟶ Q P L J Y (+1, −2, +3, −4, +5)

**14.** (3)

| | |
|---|---|
| + ⇒ ÷ | × ⇒ + |
| ÷ ⇒ − | − ⇒ × |

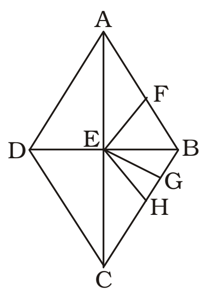
$54 + 162 - 18 \times 12 \div 6 = ?$
$\Rightarrow ? = 54 \div 162 \times 18 + 12 - 6$
$\Rightarrow ? = \frac{54}{162} \times 18 + 12 - 6$
$\Rightarrow ? = 6 + 12 - 6 = \boxed{12}$

**15.** (2) $(3)^2$ @ 1 * 7 = 98
$\Rightarrow (3)^2 \times 10 + 1 + 7 = 98$
$\Rightarrow 90 + 8 = 98$
$(4)^2$ @ 2 * 16 = 178
$\Rightarrow (4)^2 \times 10 + 2 + 16 = 178$
$\Rightarrow 160 + 18 = 178$

Therefore,
$(5)^2$ @ 3 * 9 = ?
$\Rightarrow (5)^2 \times 10 + 3 + 9$
$\Rightarrow 250 + 12 = \boxed{262}$

**16.** (4) First Row
$(4 \times 3) + (5 \times 2)$
$= 12 + 10 = 22$
Second Row
$(1 \times 2) + (6 \times 7)$
$= 2 + 42 = 44$
Third Row
$(8 \times 7) + (2 \times 5)$
$= 56 + 10 = \boxed{66}$

**17.** (2)




The triangles are :
Δ AED; Δ AEF; Δ AEB; Δ FEB; Δ EGB; Δ EHB; Δ EHG; Δ CED;
Δ CEB; Δ CEG; Δ CEH; Δ DAC; Δ BCA; Δ ADB; Δ CBD;
Thus, there are 15 triangles in the given figure.

**18.** (3) First Premise is Universal Affirmative (A-type).
Second Premise is Universal Negative (E-type).

All cups are plates.

↙↗

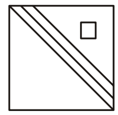
No plate is a shop.

A + E ⇒ E-type of Conclusion "No cup is a shop".
This is the Conclusion I.
Conclusion II is the Converse of the second Premise.

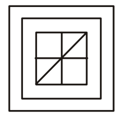
**19.** (1) From the rotation of the two cubes, it is clear that Q lies opposite B.

**20.** (1) Number of people who speak Italian and French languages :
7 + 14 = 21

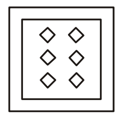
**21.** (3)



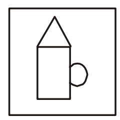
**22.** (3)



**23.** (2)



**24.** (2)



**25.** (4) S ⇒ 04, 11, 23, 30, 42
T ⇒ 02, 14, 21, 33, 40
A ⇒ 58, 65, 77, 89, 96
R ⇒ 01, 13, 20, 32, 44

| Option | S | T | A | R |
|---|---|---|---|---|
| (1) | 42 | $\xcancel{03}$ | 89 | 13 |
| (2) | 11 | 40 | 65 | $\xcancel{02}$ |
| (3) | 04 | $\xcancel{32}$ | 96 | 32 |
| (4) | 30 | 21 | 77 | 44 |

**26.** (2) A bilateral monopoly is a market structure consisting of both a monopoly (a single seller) and a monopsony (a single buyer).An example of a bilateral monopoly would be when a labor union (a monopolist in the supply of labor) faces a single large employer in a factory town (a monopsonist).

**27.** (3) Regional Rural banks (RRBs) are sponsored by five commercial banks, Punjab National Bank, State Bank of India, Syndicate Bank, United Bank of India and UCO Bank. They are owned by the Central Government, the State Government and the Sponsor Bank who hold shares in the ratios of 50%, 15% and 35% respectively.

**28.** (4) The President is the Supreme Commander of the Indian Armed Forces. He can declare war or conclude peace, on the advice of the Union Council of Ministers headed by the Prime Minister. All important treaties and contracts are made in his name. He also appoints the chiefs of the service branches of the armed forces.

**29.** (2) Anti-Defection Law is contained in the Tenth Schedule of the Constitution, which was introduced by the 52nd Amendment in 1985 during tenure of Rajiv Gandhi. Earlier, 10th schedule was related to association of Sikkim with India. Once, Sikkim became full-fledged state, this schedule was repealed via the $36^{th}$amendment act.

**30.** (2) Banaras Hindu University (BHU), formerly Central Hindu College, was established by Pandit Madan Mohan Malaviyain Varanasi, Uttar Pradesh, in 1916. The university's main campus was built on land donated by the Kashi Naresh, the hereditary ruler of Banaras. With over 12,000 students residing in campus, it is the largest residential university in Asia.

**31.** (4) The Second Battle of Tarain was fought between Mohammed Ghori and Prithviraj Chauhannear Thanesar in present-day Haryana in 1192 A.D. In this battle, Prithviraj Chauhan was defeated by Mohammed Ghori. Ghori followed up this victory by defeating Jayachandra in the Battle of Chandawar.

**32.** (4) Aluminum is the most abundant metal in the Earth's crust, and the third most abundant element therein, after oxygen and silicon. It makes up about 8% by weight of the Earth's solid surface. Earth's crust occupies less than 1% of Earth's volume. Oxygen is 46.6%, Silicon 27.77%, Aluminum is 8.09% and Iron is 5%.

**33.** (2) Pedalfer soil is composed of aluminum and iron oxides. It is a subdivision of the zonal soil order comprising a large group of soils in which sesquioxides increase relative to silica during soil formation. Pedalfers usually occur in humid areas. Pedalfer is a formative element in the United States soil taxonomic system for the Alfisols soil order.

**34.** (2) Red rot is one of the oldest known diseases of sugarcane that is caused by the fungus Colletotrichum falcatum (Glomerella tucumanensis). It is characterized by interrupted red and white patches within the cane along with a sour alcoholic odour when the cane is split open.

**35.** (3) Skin is composed of a layer of epithelial tissue (epidermis) that is supported by a layer of connective tissue. It protects the internal structures of the body from damage and dehydration. ?Blood, bone and cartilage are examples of connective tissue that that maintain the form of the body and its organs and provide cohesion and internal support.

**36.** (4) Both polio and chicken pox are caused by virus. Poliomyelitis, often called polio or infantile paralysis, is an infectious disease caused by the poliovirus; while, Chickenpox, also known as varicella, is a highly contagious disease caused by the initial infection with varicella zoster virus (VZV).

**37.** (4) Rear view mirrors of cars are convex mirrors as they enable the driver to see a wide area of the road behind the car.The convex mirror makes the rays of a parallel beam diverge as if they were coming from its focus, thereby producing a diminished virtual image, which the driver can see.

**38.** (4) The number of waves or vibrations passing through a point in one second is called Frequency. The SI (System International) Unit of Frequency is Hertz(Hz). It is named for Heinrich Rudolf Hertz, the first person to provide conclusive proof of the existence of electromagnetic waves.

**39.** (4) In computing, a modifier key is a special key (or combination) on a computer keyboard that temporarily modifies the normal action of another key when pressed together. Ctrl, Shift and Alt are the modifier keys. By themselves, modifier keys usually do nothing.

**40.** (4) Argon is an inert gas (noble gas) that is placed in Group 18 of the periodic table. It is the most abundant noble gas in Earth's crust, comprising 0.00015% of the crust. Helium (He), Neon (Ne), Argon (Ar), Krypton (Kr), Xenon (Xe), and Radon (Rn) are other noble gases that occur naturally.

**41.** (1) Ozone ($O_3$) is an allotrope of oxygen. Also known as trioxygen, one molecule of ozone is made of 3 oxygen atoms. It is formed from dioxygen by the action of ultraviolet light and also atmospheric electrical discharges.

**42.** (3) The Red Data Book is the state document established for documenting rare and endangered species of animals, plants and fungi as well as some local sub-species that exist within the territory of the state or country. This book provides central information for studies and monitoring programmes on rare and endangered species and their habits.

**43.** (3) M-SIPS stands for Modified Special Incentive Package Scheme. It was launched to promote large-scale manufacturing, to offset disability and to attract domestic and global investments into the Electronic System Design and Manufacturing (ESDM) sector in India. The scheme is available for both new projects and expansion projects.

**44.** (2) Clarence Birdseye, an American entrepreneur, and naturalist, is considered to be the founder of the modern frozen food industry. He invented the quick-freezing method in 1924, which produces the type of frozen foods that we know today. His quick-freezing process also covered packaging, type of paper used, and related innovations.

**45.** (2) Birdie: a golf score of one stroke less than par on a hole; Volley: a shot in Tennis that is hit before the ball bounces on the ground; Hit wicket: a method of dismissal in the sport of cricket.

**46.** (2) Sidi Bashir Mosque, also known as Jhulta Minar or Shaking Minarets, is located in Ahmedabad, Gujarat. It is believed that the mosque was constructed by Sidi Bashir, a slave of Sultan Ahmed Shah in the 15th century A.D.

**47.** (1) For his contribution in the culinary section, celebrity chef Sanjeev Kapoor was on 13 April 2017 honoured with the Padma Shri Award by President Pranab Mukherjee. Kapoor is the most celebrated face of Indian cuisine who runs a successful TV Channel FoodFood and has hosted 'Khana Khazana' cookery show on television for more than 17 years.

**48.** (2) The book "The World Outside My Window" has been authored by Ruskin Bond. Through the book author gives details of the most interesting facts about the insects, birds, trees and flowers he has observed in hilly areas.

**49.** (4) Japan, in March 2017, Japan launched the IGS Radar

5 spy satellite into space in an apparent mission to enhance the monitoring of North Korea. It was launched into orbit on a Japanese H-2A rocket from the Tanegashima Space Center. Japan currently has three optical satellites for daytime surveillance and three radar satellites for nighttime monitoring.

**50.** (2) India and China have dispute over the politically and strategically sensitive Tawang tract, south of the McMahon Line, in Arunachal Pradesh. The place is home to the Tawang monastery, which commands a special place in Tibetan Buddhism and is highly regarded by Buddhists in India as well. China demands India to cede Tawang to it.

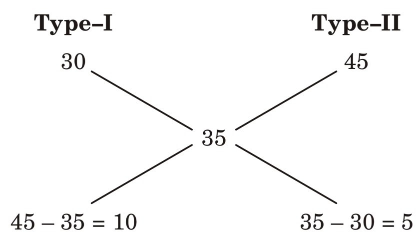
**51.** (4) Number of 3–digit numbers from 121 to 999
= 999 – 121 + 1 = 879
Number of 4–digit numbers from 1000 to 1346
= 1346 – 1000 + 1 = 347
∴ Required answer
= 879 × 3 + 347 × 4
= 2637 + 1388 = 4025

**52.** (4) Sandy and Mandy do $\frac{8}{13}$th part of work.
∴ Work done by Andy = $1 - \frac{8}{13} = \frac{5}{13}$th part
∴ Andy's share
= Rs. $\left(\frac{5}{13} \times 2600\right)$ = Rs. 1000

**53.** (3) Volume of cone = $\frac{1}{3}\pi r^2 h$
$= \frac{1}{3} \times \pi \times 8 \times 8 \times 24$ cu. cm.
= 512π cu. cm.
Volume of cylinder = $\pi R^2 H$
= π × 6 × 6 × 6 cu. cm.
= 216π cu. cm.
Wastage = 512π – 216π
= 296π cu. cm.
Percentage wastage
$= \frac{296\pi}{512\pi} \times 100 = 57.8\%$

**54.** (2) Single equivalent discount
$= \left(x + y - \frac{xy}{100}\right)\%$
$= \left(30 + 20 - \frac{30 \times 20}{100}\right)\%$
= (50 – 6)% = 44%

**55.** (1) C.P. of mixture = $\frac{42 \times 100}{120}$
= Rs. 35 per kg.
By the rule of alligation,




∴ Required ratio = 10 : 5
= 2 : 1

**56.** (4) If each number is doubled, their average also gets doubled.
∴ New average = 2 × 7 = 14

**57.** (1) C.P. of article = Rs. 100 (let)
∴ Its S.P. = Rs. 120
Case II,
C.P. = Rs. 40
S.P. = Rs. $\left(\frac{40 \times 150}{100}\right)$ = Rs. 60
Difference of S.Ps
= Rs. (120 – 60) = Rs. 60
When difference = Rs. 60, C.P. = Rs. 100
When difference = Rs. 90, C.P.
= Rs. $\left(\frac{100}{60} \times 90\right)$ = Rs. 150

**58.** (2) Let Amit's income be Rs. 100.
Donation to school = Rs. 20
Amount deposited in bank
= Rs. $\left(\frac{80 \times 20}{100}\right)$ = Rs. 16
Savings = Rs. (100 – 20 – 16)
= Rs. 64
When savings = Rs. 64, income = Rs. 100
When savings = Rs. 12800, income = Rs. $\left(\frac{100}{64} \times 12800\right)$
= Rs. 20000

**59.** (1) Relative speed
= (43 + 51) kmph.
= 94 kmph.
$= \left(\frac{94 \times 5}{18}\right)$ metre/second
$= \left(\frac{235}{9}\right)$ metre/second
∴ Length of slower train
$= \left(\frac{235}{9} \times 9\right)$ metre
= 235 metre

**60.** (1) Interest for 1.5 years
= Rs. (969 – 918) = Rs. 51
∴ Interest for 2 years = $\frac{51}{1.5} \times 2$
= Rs. 68
∴ Principal = Rs. (918 – 68)
= Rs. 850
∴ Rate = $\frac{\text{Interest} \times 100}{\text{Principal} \times \text{Time}}$
$= \frac{68 \times 100}{850 \times 2}$ = 4% per annum

**61.** (1) $4^{x+y} = 256$
$\Rightarrow 4^{x+y} = 4^4$
$\Rightarrow x + y = 4$ ... (i)
Again,
$256^{x-y} = 4$
$\Rightarrow 4^{4(x-y)} = 4^1$
$\Rightarrow 4(x - y) = 1$
$\Rightarrow 4x - 4y = 1$ ...(ii)
By equation (i) × 4 + (ii),
$4x + 4y + 4x - 4y = 16 + 1$
$\Rightarrow 8x = 17 \Rightarrow x = \frac{17}{8}$
From equation (i),
$\frac{17}{8} + y = 4$
$\Rightarrow y = 4 - \frac{17}{8} = \frac{32 - 17}{8} = \frac{15}{8}$

**62.** (2) $x^2 - x - 6 = x^2 - 3x + 2x - 6$
$= x(x - 3) + 2(x - 3)$
$= (x - 3)(x + 2)$
$(x - 3)$ is a factor of expression $P(x) = px^3 - qx^2 - 7x - 6$.
∴ P(3) = 0 i.e., $p(3)^3 - q(3)^2 -$

$7 \times 3 - 6 = 0$

$\Rightarrow 27p - 9q - 21 - 6 = 0$

$\Rightarrow 3p - q = 3$ ... (i)

Again, $(x + 2)$ is a factor of expression $P(x) = px^3 - qx^2 - 7x - 6$.

$\therefore$ P (–2) = 0

$\Rightarrow p(-2)^3 - q(-2)^2 - 7(-2) - 6 = 0$

$\Rightarrow -8p - 4q + 14 - 6 = 0$

$\Rightarrow 8p + 4q = 8$

$\Rightarrow 2p + q = 2$ ... (ii)

On adding (i) and (ii),

$3p - q + 2p + q = 3 + 2$

$\Rightarrow 5p = 5 \Rightarrow p = 1$

From equation (i),

$3 - q = 3$

$\Rightarrow q = 3 - 3 = 0$

**63.** (1) $x^2 - 9 = (x + 3)(x - 3)$

$(x + 3)$ is a factor of expression $P(x) = px^3 - 2x^2 - qx + 18$

$\therefore$ P (–3) = 0

$\Rightarrow p(-3)^3 - 2(-3)^2 - q(-3) + 18 = 0$

$\Rightarrow -27p - 18 + 3q + 18 = 0$

$\Rightarrow -27p = -3q$

$\Rightarrow \frac{p}{q} = \frac{3}{27} = \frac{1}{9}$

**64.** (2) $x + \frac{1}{x} = 5$

On squaring both sides,

$\left(x + \frac{1}{x}\right)^2 = 25$

$\Rightarrow x^2 + \frac{1}{x^2} + 2 = 25$

$\Rightarrow x^2 + \frac{1}{x^2}$

$= 25 - 2 = 23$ ... (i)

Again,

$\left(x + \frac{1}{x}\right)^3 = 5^3 = 125$

$\Rightarrow x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = 125$

$\Rightarrow x^3 + \frac{1}{x^3} + 3 \times 5 = 125$

$\Rightarrow x^3 + \frac{1}{x^3} = 125 - 15 = 110$ ... (ii)

$\therefore \left(x^2 + \frac{1}{x^2}\right)\left(x^3 + \frac{1}{x^3}\right)$

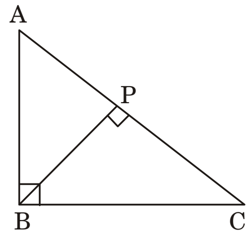
$= 23 \times 110$

$\Rightarrow \left(x^5 + \frac{1}{x} + x + \frac{1}{x^5}\right) = 2530$

$\Rightarrow \left(x^5 + \frac{1}{x^5}\right) + 5 = 2530$

$\Rightarrow x^5 + \frac{1}{x^5} = 2530 - 5 = 2525$

**65.** (3)



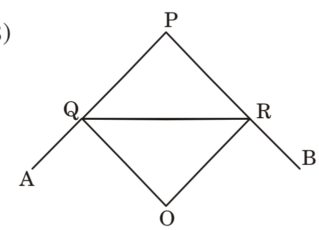

$\angle ABC = 90°$

$\angle BAP = 50°$

$\therefore \angle BCA = 90° - 50° = 40°$

$\therefore \angle PBC = 90° - 40° = 50°$

**66.** (3)




$\angle OQR = \frac{1}{2}(180° - \angle PQR)$

$= 90° - \frac{1}{2}\angle PQR$

$\angle QRO = \frac{1}{2}(180° - \angle PRQ)$

$= 90° - \frac{1}{2}\angle PRQ$

In $\Delta$OQR,

$\therefore 90° - \frac{1}{2}\angle PQR + 90° - \frac{1}{2}\angle PRQ = 180° - 50°$

$\Rightarrow \frac{1}{2}(\angle PQR + \angle PRQ) = 180° - 130° = 50°$

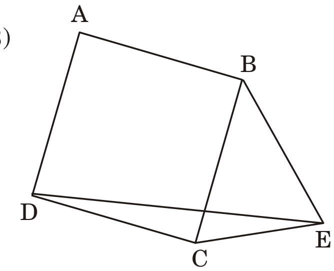
$\Rightarrow \angle PQR + \angle PRQ = 100°$

$\therefore \angle QPR = 180° - 100° = 80°$

**Note :** $\angle QPR = 180° - 2 \times \angle QOR$

$= 180° - 2 \times 50° = 80°$

**67.** (3)




BC = CE

$\angle CBE = \angle CEB = 84°$

$\angle ADC = 78°$

$\angle BCE = 180° - 2 \times 84°$

$= 180° - 168° = 12°$

$\angle DAB = 180° - 78° = 102°$

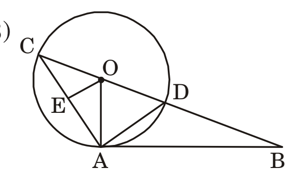
$\therefore \angle DCE = 102 + 12 = 114°$

$\therefore \angle DEC = \angle CDE$

$= \frac{1}{2}(180° - 114°)$

$= \frac{1}{2} \times 66° = 33°$

**68.** (3)




OA $\perp$ AB

OB = (36 – 10) cm. = 26 cm.

OA = 10 cm.

$\therefore$ Area of $\Delta$OAB = $\frac{1}{2}$ OA $\times$ AB

$= \frac{1}{2} \times 10 \times 24 = 120$ sq. cm.

Again, $\angle CAD = 90°$

CD = 20

$AC^2 + AD^2 = CD^2$

$(16)^2 + (12)^2 = 20^2$

$\therefore$ AC = 16 cm.

$\therefore$ CE = 8 cm.

OC = 10 cm.

$OE = \sqrt{10^2 - 8^2} = \sqrt{100 - 64}$

= 6 cm.

$\therefore$ Area of $\Delta$OAC = $\frac{1}{2}$ $\times$ AC $\times$ OE

$= \frac{1}{2} \times 16 \times 6 = 48$ sq. cm.

$\therefore$ Required area = 120 + 48 = 168 sq. cm.

**69.** (1) $\dfrac{2}{\cot\frac{A}{2}+\tan\frac{A}{2}}$

$= \dfrac{2}{\dfrac{\cos\frac{A}{2}}{\sin\frac{A}{2}}+\dfrac{\sin\frac{A}{2}}{\cos\frac{A}{2}}}$

$= \dfrac{2}{\dfrac{\cos^2\frac{A}{2}+\sin^2\frac{A}{2}}{\sin\frac{A}{2}.\cos\frac{A}{2}}}$

$= 2\sin\frac{A}{2}\,.\,\cos\frac{A}{2} = \sin A$

**70.** (3) Expression

$= \left(\dfrac{1}{\sec A+\tan A}\right)^2$

$= \left(\dfrac{\sec A-\tan A}{(\sec A+\tan A)(\sec A-\tan A)}\right)^2$

$= (\sec A - \tan A)^2$

$[\because \sec^2 A - \tan^2 A = 1]$

$= \left(\dfrac{1}{\cos A}-\dfrac{\sin A}{\cos A}\right)^2$

$= \dfrac{(1-\sin A)^2}{\cos^2 A} = \dfrac{(1-\sin A)^2}{1-\sin^2 A}$

$= \dfrac{(1-\sin A)^2}{(1-\sin A)\,(1+\sin A)}$

$= \dfrac{1-\sin A}{1+\sin A}$

**71.** (1) $(\text{cosec}^4A - \cot^2A) - (\cot^4A + \text{cosec}^2A)$

$= \text{cosec}^4A - \cot^4A - \cot^2A - \text{cosec}^2A$

$= (\text{cosec}^2A - \cot^2A)(\text{cosec}^2A + \cot^2A) - \cot^2A - \text{cosec}^2A$

$= \text{cosec}^2A + \cot^2A - \cot^2A - \text{cosec}^2A = 0$

$[\because \text{cosec}^2A - \cot^2A = 1]$

**72.** (2) Percentage increase

$= \left(\dfrac{6-3}{3}\right) \times 100 = 100\%$

**73.** (3) Required answer

= 700 – 300 = 400

**74.** (1) Total number of audience in show–3 = (6 + 4 + 7.5) × 100

= 1750

Total number of audience in show–2 = (3 + 4.5 + 7) × 100

= 1450

Percentage increase

$= \dfrac{1750-1450}{1450} \times 100$

$= \dfrac{300\times100}{1450} = 20.69$

**75.** (4) Total revenue earned :

Screen–1 ⇒ Rs. (5 + 3 + 6) × 100 × 350 = Rs. 490000

Screen–2 ⇒ Rs. (6 + 4.5 + 4) × 100 × 300 = Rs. 435000

Screen–3 ⇒ Rs. (6.5 + 7 + 7.5) × 100 × 250 = Rs. 525000

**76.** (2) **Pass away** = to die; to stop existing.

Hence, to pass the time..... should be used here.

**77.** (3) No sooner.....than is correct form of connective.

Hence, than it began to rain..... should be used.

**78.** (4) **Unless** is used to say that something can only happen in a particular situation.

**79.** (3) **Hindrance** = a thing that makes it more difficult for somebody to do something.

**Look at the sentence :**

The high price is a major hindrance **to** potential buyers.

**80.** (2) **Lethargy (Noun)** = a lack of energy and enthusiasm; dullness; drowsy; tiredness.

**Look at the sentence :**

There was an air of lethargy about him.

**81.** (1) **Hoodwink (Verb)** = deceive; dupe; defraud; cheat.

**Look at the sentence :**

He hoodwinked us into agreeing.

**82.** (4) **Multifaceted (Adjective)** = having many different parts/aspects or features; complex.

**Simple (Adjective)** = easy; uncomplicated.

**Look at the sentences :**

It is a multifaceted business; offering a range of services.

The instructions were written in simple English.

**83.** (2) **Trepidation (Noun)** = a feeling of fear or anxiety about something; nervousness; dismay.

**Calm (Noun)** = not showing or feeling nervousness; quiet situation.

**Look at the sentences :**

We view future developments with some trepidation.

It was the calm of the countryside that he loved so much.

**84.** (3) **Kick the bucket** = to die.

**Look at the sentence :**

When the old woman finally kicked the bucket there was no mention of yours truly in the will.

**85.** (3) **An axe to grind** = a have a selfish motive.

**Look at the sentence :**

Environmentalists have no political axe to grind they just want to save the planet.

**86.** (1) **Look forward to something** = await eagerly; anticipate.

**90.** (2) **Glamorous (Adjective)** = attractive in an exciting and special way.

**Look at the sentence :**

She was looking very glamorous.

**91.** (4) **Sustenance (Noun)** = support; maintenance; food.

**Look at the sentence :**

Poor rural economies turned to potatoes for sustenance.

**94.** (2) Subject + was being + $V_3$ + preposition + by + object

**95.** (4) Connective ⇒ if/whether

Do you want ⇒ I wanted

Reporting verb ⇒ asked; enquired of

**97.** (4) **Vital (Adjective)** = essential; indispensable.

**99.** (2) **Minimal (Adjective)** = very little; minimum.

❑❑❑

# SET 11

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 10.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word-pair from the given alternatives :
Canada : Ottawa : : ? : ?
(1) Egypt : Cairo
(2) Norway : Havana
(3) France : Rome
(4) Kenya : Teheran

**2.** In the following question, select the related letters from the given alternatives :
JQXE : LSZG : : MTNL : ?
(1) OPVN (2) KRPN
(3) OVPN (4) OPLJ

**3.** In the following question, select the related number from the given alternatives :
7 : 48 : : 11 : ?
(1) 120 (2) 121
(3) 131 (4) 170

**4.** In the following question, select the odd word from the given alternatives :
(1) Square (2) Rectangle
(3) Cylinder (4) Triangle

**5.** In the following question, select the odd letter from the given alternatives :
(1) A (2) S
(3) U (4) I

**6.** In the following question, select the odd number from the given alternatives :
(1) 216 (2) 125
(3) 343 (4) 510

**7.** Arrange the given words in the sequence in which they occur in the dictionary.
1. Dragon 2. Draculla
3. Dormont 4. Drapery
5. Deviate
(1) 53214 (2) 53124
(3) 53421 (4) 53412

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
KV, LU, MT, ?
(1) NS (2) OS
(3) OU (4) SN

**9.** In the following question, select the missing number from the given alternatives.
3, 4, 5, 4, 9, 10, 6, 16, 15, 9, 25, 20, 13, 36, ?
(1) 17 (2) 25
(3) 28 (4) 31

**10.** The ratio of present ages of Anil and Aakash is 4 : 5. Three years later their ages will be in ratio 7 : 8. What is the present age (in years) of Anil?
(1) 8 (2) 6
(3) 4 (4) 10

**11.** Karan remembers that his sister's birthday is not after 18th August. Karan's mother remembers that Karan's sister birthday is before 20th August but after 17th August. On which date of August is Karan's sister birthday?
(1) 18 (2) 17
(3) 19 (4) 20

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**SUPERCONDUCTORS**
(1) SPORTS (2) SPUNT
(3) STERN (4) SPECTRUM

**13.** In a certain code language, "PEN–TAN" is written as "0". How is "DEN–COB" written in that code language?
(1) 8 (2) 3
(3) 9 (4) 7

**14.** If "÷" denotes "multiplied by", "+" denotes "subtracted from", "–" denotes "added to" and "×" denotes "divided by", then which of the following equation is true?
(1) $16 + 19 \times 21 - 5 = 201$
(2) $5 \times 6 + 4 \div 3 = \frac{37}{6}$
(3) $6 \times 3 + 12 \div 3 = 21$
(4) $18 \times 6 \div 8 - 12 = 3\ 6$

**15.** If 5 # 9 @ 7 = 52 and 3 @ 9 # 2 = – 89, then 7 # 6 @ 9 = ?
(1) 67 (2) 56
(3) 43 (4) 28

**16.** In the folloiwng question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

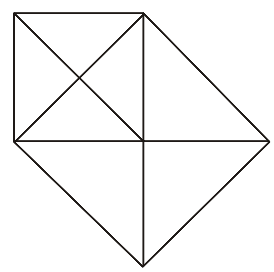
| 3 | 17 |
|---|---|
| 11 | 4 |

| 2 | 16 |
|---|---|
| 10 | 7 |

| 6 | 13 |
|---|---|
| 15 | ? |

(1) 1 (2) 2
(3) 3 (4) 4

**17.** How may triangles are there in the given figure ?



(1) 12 (2) 13
(3) 15 (4) 18

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

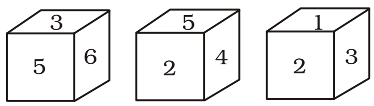
**Statements :**
I. All stars are white.
II. All white are moon .
III. No moon is blue.

**Conclusions :**
I. Some moon are stars.
II. No blue is stars.
III. Some white are stars.
IV. Some blue are white.

(1) Only Conclusions I, II and III follow.

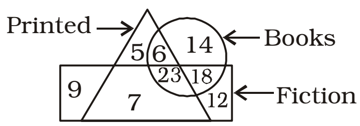
(2) Only Conclusions III and IV follow.
(3) Only Conclusions I, II and IV follow.
(4) Only Conclusions II, III and IV follow.

**19.** Three positions of a cube are shown below. What will come opposite to face containing '5'?




(1) 1 (2) 3
(3) 4 (4) 6

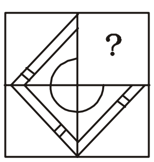
**20.** In the given figure, how many books are fiction?



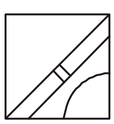
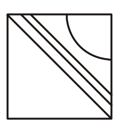

(1) 23 (2) 18
(3) 53 (4) 41

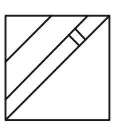
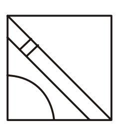
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



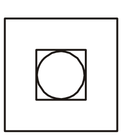

**Answer Figures :**

(1)  (2) 

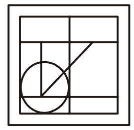
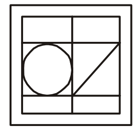
(3)  (4) 

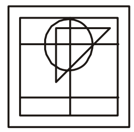
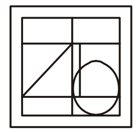
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



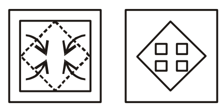
**Answer Figures :**

(1)  (2) 

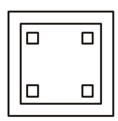
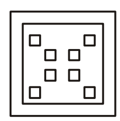
(3)  (4) 

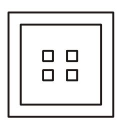
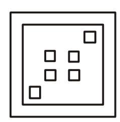
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



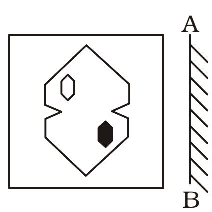
**Answer Figures :**

(1)  (2) 

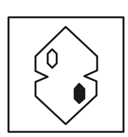
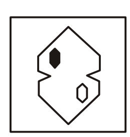
(3)  (4) 

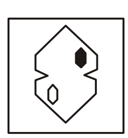
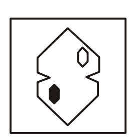
**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'P' can be represented by 32, 44 etc. and 'U' can be represeted by 76, 88 etc. Similarly, you have to identify the set for the word **'PALE'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | R | P | S | I | A |
| 1 | I | A | R | P | S |
| 2 | P | S | I | A | R |
| 3 | A | R | P | S | I |
| 4 | S | I | A | R | P |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | L | E | U | G | J |
| 6 | G | J | L | E | U |
| 7 | E | U | G | J | L |
| 8 | J | L | E | U | G |
| 9 | U | G | J | L | E |

(1) 43, 23, 55, 56
(2) 33, 30, 67, 75
(3) 11, 42, 86, 98
(4) 20, 04, 79, 87

## GENERAL AWARENESS

**26.** Which among the following is not an account under Balance of Payment?
(1) Current Account
(2) Capital Account
(3) Official Reserves Account
(4) Unilateral Payments Account

**27.** Match the following.

| | Term | | Meaning |
|---|---|---|---|
| 1. | Globalisation | a. | Process of reducing or removing restrictions on iternational trade. |
| 2. | Privatisation | b. | Process of interaction and integration among the people, companies and government of different nations. |
| 3. | Liberalisation | c. | Called as denationalization or disinvestment. |

(1) 1-c, 2-a , 3-b
(2) 1-b, 2-c, 3-a
(3) 1-b, 2-a, 3-c
(4) 1-c, 2-b, 3-a

**28.** Who appoints Governor of a state in India?
(1) Prime Minister of India
(2) Council of Minister
(3) Judge of Supreme Court
(4) President of India

**29.** What is the literal meaning of 'Certiorari'?
(1) We command
(2) To have the body of
(3) To forbid
(4) To be certified (or) to be informed

**30.** Which among the following Mughal Emperor was illiterate?
(1) Shah Jahan
(2) Aurangzeb (3) Akbar
(4) Jahangir

**31.** Where was the 'Azad Hind Fauj' founded?
(1) Singapore (2) Thailand
(3) Britain (4) Italy

**32.** Strait of Malacca separates which two land masses?
(1) Malay Peninsula and Indonesian Island of Sumatra
(2) Africa and Europe
(3) India and Sri Lanka
(4) North America and South America

**33.** The latitude which passes through Sikkim also passes through _____.
(1) Haryana
(2) Rajasthan
(3) Uttar akhand
(4) Himachal Pradesh

**34.** Which of the following is not a plant hormone?
(1) Gibberellic
(2) Auxins
(3) Cytokinins
(4) Thyroxin

**35.** Nephron is related to which of the following system of human body?
(1) Circulatory system
(2) Excretory system
(3) Reproductive system
(4) Respiratory system

**36.** Which Vitamin is obtained from Sun rays?
(1) Vitamin A
(2) Vitamin C
(3) Vitamin K
(4) Vitamin D

**37.** Speed of light is maximum in
(1) vacuum (2) solids
(3) liquids (4) gases

**38.** What is the SI unit of electric current?
(1) Newton (2) Joule
(3) Ampere (4) Watt

**39.** An IP address is _____ bit number.
(1) 8 (2) 32
(3) 64 (4) 104

**40.** Process of loosing electrons is known as _____.
(1) oxidation (2) reduction
(3) radiation
(4) both oxidation and reduction

**41.** Anions are formed by _____.
(1) losing of electrons
(2) gaining of electrons
(3) gaining of neutrons
(4) losing of neutrons

**42.** Which among the following is the major cause of acid rain?
(1) Carbon dioxide
(2) Carbon monoxide
(3) Nitrogen dioxide
(4) Oxygen

**43.** First state to implement Saur Sujala Yojana is _____.
(1) Chattisgarh
(2) Uttaranchal
(3) Gujarat
(4) Maharashtra

**44.** Who is known for the invention of 'World Wide Web'?
(1) Sir Tim -Berners-Lee
(2) Maxwell
(3) Martin Cooper
(4) S. A. Forbes

**45.** B. Sai Praneeth is associated with which of the following sport?
(1) Hockey (2) Badminton
(3) Chess (4) Boxing

**46.** Which of the following pair is incorrect?
(1) Muthuswami Dikshitar - Carnatic Music
(2) Parveen Sultana – Singer
(3) M.S. Gopalakrishnan – Violinist
(4) Nandlal Bose – Flute

**47.** Who among the following is the 2017 Asian Award recipient for the outstanding achievement in Cinema?
(1) Kunal Nayyar
(2) Vishal Bhardwaj
(3) Om Puri
(4) Zeishan Quadri

**48.** Who amongst the following is the author of the book "Rekha : The untold story" a biography on a veteran actress Rekha?
(1) Yasser Usman
(2) Anand Neelakantan
(3) Ram Kamal Mukherjee
(4) K. Vijay Kumar

**49.** Which among the following country exited from Trans Pacific Partnership (TTP) in Jan 2017 ?
(1) Japan (2) USA
(3) Mexico (4) Brunei

**50.** Which of the following country doesn't matches to its famous tourist place?
(1) China – Great Wall of China
(2) Bhutan – Paro Taktsang
(3) Nepal – Pashupatinath Temple
(4) Sri Lanka – Padman abhaswamy Temple

## QUANTITATIVE APTITUDE

**51.** How many numbers are there from 2000 to 7000 which are both perfect squares and perfect cubes?
(1) 0 (2) 1
(3) 2 (4) 3

**52.** 3 men or 4 women can complete a job in 120 days. 12 men and 16 women will complete the same job in how many days?
(1) 12 (2) 14
(3) 15 (4) 18

**53.** If the diameter of a hemisphere is 21 cm, then what is the volume (in $cm^3$) of hemisphere?
(1) 2810 (2) 1250.5
(3) 1725.25 (4) 2425.5

**54.** After two successive discounts of 20% and 12% an article is sold for Rs. 16896. What is the marked price (in Rs.) of the article?
(1) 21500 (2) 23800
(3) 22000 (4) 24000

**55.** The ratio of speeds of three racers is 3 : 4 : 6. What is the ratio of time taken by the three racers to cover the same distance?
(1) 3 : 4 : 6 (2) 6 : 4 : 3
(3) 4 : 3 : 2 (4) 2 : 3 : 5

**56.** In a match, average of runs scored by 7 players is 53. If the runs scored by 6 players are 121, 40, 26, 56, 37 and 48, then how many runs did the 7th player score?
(1) 26 (2) 37
(3) 43 (4) 48

**57.** Mohit buys an old bicycle for Rs. 2700 and spends Rs. 500 on its repairs. If he sells the bicycle for Rs. 3520, then what is his profit per cent ?
(1) 10 (2) 12.5
(3) 15 (4) 20

**58.** If the price of onion increases from Rs. 24/kg to Rs. 36/kg, then by what per cent a household should decrease the consumption of onion so that expenditure remains same?
(1) 25 (2) 33.33
(3) 50 (4) 20

**59.** A train travels 20% faster than a car. Both start from point A at the same time and reach point B, 180 km away at the same time. On the way the train takes 30 minutes for stopping at the stations. What is the speed (in km/hr) of the train?
(1) 56 (2) 66
(3) 72 (4) 80

**60.** A sum of Rs. 720 amounts to Rs. 882 at simple interest in $1\frac{1}{2}$ years. In how many years will the sum of Rs. 800 amounts to Rs. 1040 at the same rate?
(1) 3 (2) 2
(3) 4 (4) 6

**61.** If $\left(\frac{x}{y}\right)^{a-4} = \left(\frac{y}{x}\right)^{2a-5}$, then what is the relation between $x$ and y?
(1) $x > y$
(2) Cannot be determined
(3) $x < y$ (4) $x = y$

**62.** If $x + \frac{1}{x} = 3$, then what is the value of $\frac{x^4 + 5x^3 + 3x^2 + 5x + 1}{x^4 + 1}$ ?
(1) $\frac{25}{7}$ (2) 4
(3) $\frac{31}{7}$ (4) $\frac{33}{7}$

**63.** If $3a - \left(\frac{3}{a}\right) - 3 = 0$, then what is the value of $a^3 - \left(\frac{1}{a^3}\right) + 2$?
(1) 0 (2) 2
(3) 4 (4) 6

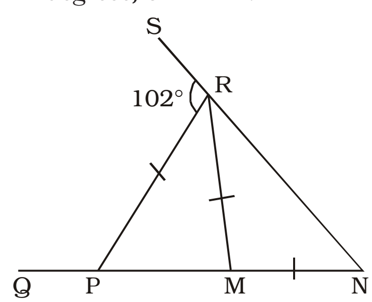
**64.** If $\frac{x + \sqrt{x^2 - 1}}{x - \sqrt{x^2 - 1}} + \frac{x - \sqrt{x^2 - 1}}{x + \sqrt{x^2 - 1}} = 194$, then what is the value of $x$ ?
(1) $\frac{7}{2}$ (2) 4
(3) 7 (4) 14

**65.** In ΔABC, AD is the median and AD = $\left(\frac{1}{2}\right)$BC. If ∠ACD = 40°, then what is the value (in degrees) of ∠DAB?
(1) 30 (2) 40
(3) 50 (4) 80

**66.** Circum-centre of ΔABC is O. If ∠BAC = 75° and ∠BCA = 80°, then what is the value (in degrees) of ∠OAC?
(1) 45 (2) 65
(3) 90 (4) 95

**67.** Smaller diagonal of a rhombus is equal to length of its sides. If length of each side is 4 cm, then what is the area (in $cm^2$) of an equilateral triangle with side equal to the bigger diagonal of the rhombus?
(1) 6 (2) $9\sqrt{3}$
(3) 12 (4) $12\sqrt{3}$

**68.** In the given figure, MN = RM = RP, then what is the value (in degrees) of ∠MPR?




(1) 47
(2) 68
(3) 72
(4) Cannot be determined

**69.** What is the simplified value of (cos A + sin A)(cot A + tan A)?
(1) sec A + cosec A
(2) sin A + cos A
(3) tan A + cot A
(4) sec A – cosec A

**70.** What is the simplified value of $\sqrt{\frac{\text{cosec A}}{\text{cosec A} - 1} + \frac{\text{cosec A}}{\text{cosec A} + 1}}$ ?

(1) $\sqrt{2}$ sec A (2) $\sqrt{2}$ cosec A

(3) $\sec^2$ A (4) 2 sec A

**71.** If 2 cos θ = 2 – sin θ, then what is the value of cos θ?

(1) 1 or $\frac{3}{5}$ (2) 1 or $-\frac{1}{2}$

(3) –1 or $-\frac{1}{2}$ (4) –1 or $\frac{3}{5}$

**Directions (72–75) :** The table given below shows the ratio of exports and imports of a country for 5 years.

Total trade = Exports + Imports

| Year | Exports: Imports |
|---|---|
| Year 1 | 10:9 |
| Year 2 | 11:7 |
| Year 3 | 4:3 |
| Year 4 | 5:8 |
| Year 5 | 12:13 |

**72.** If the total trade of the country in year 3 was 1183 crore dollars, then what was the difference (in crore dollars) between exports and imports of the country in that year?

(1) 169 (2) 173

(3) 142 (4) 158

**73.** The total trade for year 2 and year 4 is same. If exports of year 4 are 315 crore dollars, then what are the imports (in crore dollars) of year 2?

(1) 306.4 (2) 309.8

(3) 323.7 (4) 318.5

**74.** Total trade of year 1 is twice of the total trade of year 5. If total trade of year 1 is 5700 crore dollars, then what is the difference (in crore dollars) in exports of year 1 and year 5?

(1) 1835 (2) 1632

(3) 1368 (4) 1423

**75.** The total trade of 5 years is 3800, 3600, 2800, 3900 and 5000 crore dollars respectively. What is the difference (in crore dollars) in the average exports and average imports respectively?

(1) 60 (2) –60

(3) –90 (4) 120

## ENGLISH COMPREHENSION

**Directions (76–75) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** On Sundays (1)/ I prefer reading (2)/ than going out visiting my friends. (3)/ No Error (4)

**77.** Rohit is two year (1)/ junior than Mukesh (2)/ in the office. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** God is _____.

(1) immanent (2) mortal

(3) imminent (4) deference

**79.** Riya _____ her matriculation examination in 2016.

(1) completed (2) passed

(3) obtained (4) gathered

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Articulate**

(1) Dominate (2) Distinct

(3) Helpers (4) Unsteady

**81. Ascend**

(1) Lay (2) Climb

(3) Weaken (4) Void

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Waggish**

(1) Jocular (2) Whimsical

(3) Flippant (4) Solemn

**83. Desecrate**

(1) Sanctify (2) Profane

(3) Befoul (4) Defile

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

**84. Will-o-the wisp**

(1) Something that is impossible to get or achieve.

(2) To keep off an unwanted and undesirable person.

(3) To spend recklessly.

(4) Accept or leave the offer.

**85. To go through fire and water**

(1) To scold someone

(2) To experience many dangers in order to achieve something

(3) To act without restraints

(4) Something which hurts

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** We do not **(agree on)** certain things.

(1) agree to

(2) agree about

(3) agree of

(4) No improvement

**87.** There are two pens here and **(either write)** well.

(1) either have written

(2) either wrote well

(3) either writes

(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. A strong blast of wind.**

(1) Implosion (2) Trickle

(3) Gust (4) Mantle

**89. Phobia of dogs**

(1) Orophobia

(2) Cynophobia

(3) Batrachophobia

(4) Phemophobia

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Bulettin (2) Barrage

(3) Buoyant (4) Beginner

**91.** (1) Guidance

(2) Ambassador

(3) Handkercheif

(4) Labourer

**Directions (92–93) :** The questions below consist of a set of la-

belled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. He was a funny looking man with a high, bald, done shaped head, a face very small in comparison and a long wavy beard.
Q. He didn't work at his trade-a stonecutter, more than what was necessary to keep his wife and three boys alive.
R. His unusual features were standing a joke among his friends.
S. He was a poor man-an idler.
(1) PRQS (2) QPSR
(3) RQPS (4) SRPQ

**93.** P. When all the credit worthy people were given loans to a logical limit, they ceased to be a part of the market.
Q. Even this would have been understandable if it could work as an eye opener.
R. Owing to the materialistic culture elsewhere, it was possible to keep selling newer products to the consumers despite having existing ones which served equally well.
S. They were lured through advertising and marketing techniques of 'dustbinisation' of the customer; and then finally, once they became ready customers, they were given loans and credits to help them by more and more.
(1) PRQS (2) RSPQ
(3) QSPR (4) RPQS

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**John was arrested on a charge of murder, but for lack of evidence he was released.**
(1) The police arrested John on a charge of murder, but for lack of evidence released him.
(2) John was arrested on a charge of murder but was released for lack of evidence.
(3) The police arrested John on a charge of murder, but for lack of evidence he was released.
(4) John had been arrested on a charge of murder, but for lack of evidence he had been released.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**He said, "I saw a snake here."**
(1) He said that he had seen a snake there.
(2) He said that he saw a snake here.
(3) He said that he saw a snake there .
(4) He said that he had seen a snake.

**Directions (96–100) :** In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

Morality is **(96)** with ethics and symbolises the doctrine of actions right or wrong. Politics is the **(97)** of expediency and need not always be **(98)**. If something is wrong and **(99)** expedient, it cannot be **(100)**.

**96.** (1) discussed
(2) identified
(3) recognised
(4) rectified

**97.** (1) source
(2) collection
(3) requirement
(4) notion

**98.** (1) wrong (2) right
(3) neutral (4) different

**99.** (1) merely (2) essentially
(3) surely (4) hardly

**100.** (1) justifiable (2) relevant
(3) acquired (4) immoral

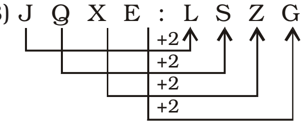
## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (3) | **3.** (1) | **4.** (3) |
| **5.** (2) | **6.** (4) | **7.** (1) | **8.** (1) |
| **9.** (2) | **10.** (3) | **11.** (1) | **12.** (4) |
| **13.** (2) | **14.** (4) | **15.** (1) | **16.** (1) |
| **17.** (3) | **18.** (1) | **19.** (1) | **20.** (4) |
| **21.** (4) | **22.** (2) | **23.** (2) | **24.** (4) |
| **25.** (4) | **26.** (3) | **27.** (2) | **28.** (4) |
| **29.** (4) | **30.** (3) | **31.** (1) | **32.** (1) |
| **33.** (2) | **34.** (4) | **35.** (2) | **36.** (4) |
| **37.** (1) | **38.** (3) | **39.** (2) | **40.** (1) |
| **41.** (2) | **42.** (3) | **43.** (1) | **44.** (1) |
| **45.** (2) | **46.** (4) | **47.** (1) | **48.** (1) |
| **49.** (2) | **50.** (4) | **51.** (2) | **52.** (3) |
| **53.** (4) | **54.** (4) | **55.** (3) | **56.** (3) |
| **57.** (1) | **58.** (2) | **59.** (3) | **60.** (2) |
| **61.** (2) | **62.** (1) | **63.** (4) | **64.** (3) |
| **65.** (3) | **66.** (2) | **67.** (4) | **68.** (2) |
| **69.** (1) | **70.** (1) | **71.** (1) | **72.** (1) |
| **73.** (4) | **74.** (2) | **75.** (1) | **76.** (3) |
| **77.** (2) | **78.** (1) | **79.** (2) | **80.** (2) |
| **81.** (2) | **82.** (4) | **83.** (1) | **84.** (1) |
| **85.** (2) | **86.** (4) | **87.** (3) | **88.** (3) |
| **89.** (2) | **90.** (1) | **91.** (3) | **92.** (1) |
| **93.** (2) | **94.** (1) | **95.** (1) | **96.** (2) |
| **97.** (4) | **98.** (2) | **99.** (1) | **100.** (4) |

## EXPLANATIONS

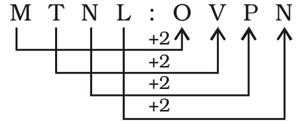
**1.** (1) The capital of Canada is Ottawa. Similarly the capital of Egypt is Cairo.

**2.** (3) J Q X E : L S Z G




Similarly,

M T N L : O V P N




**3.** (1) $(7)^2 - 1 = 48$
Similraly,
$(11)^2 - 1 = 120$

**4.** (3) Except 'cylinder', all others are two diamensional plane figures.

**5.** (2) Except 'S' all others are vowels.

**6.** (4) Except '510' all are cube number.
$216 = 6 \times 6 \times 6$

$125 = 5 \times 5 \times 5$
$343 = 7 \times 7 \times 7$
But, $510 = (8 \times 8 \times 8) - 2$
$= 512 - 2$

**7.** (1) Arrangement of words as per dictionary :
(5) Deviate
↓
(3) Dormont
↓
(2) Draculla
↓
(1) Dragon
↓
(4) Drapery

**8.** (1)
$K \xrightarrow{+1} L \xrightarrow{+1} M \xrightarrow{+1}$ [N]
$V \xrightarrow{-1} U \xrightarrow{-1} T \xrightarrow{-1}$ [S]

**9.** (2) There are three alternating series :
(i) $3 + 1 = 4$
$4 + 2 = 6$
$6 + 3 = 9$
$9 + 4 = 13$
(ii) $4 = (2)^2$
$9 = (3)^2$
$16 = (4)^2$
$25 = (5)^2$
$36 = (6)^2$
(iii) $5 + 5 = 10$
$10 + 5 = 15$
$15 + 5 = 20$
$20 + 5 =$ [25]

**10.** (3) Let present age of Anil $= 4x$ years
Present age of Akash $= 5x$ years
According to the question,
$$\frac{4x+3}{5x+3} = \frac{7}{8}$$
$\Rightarrow 8(4x + 3) = 7(5x + 3)$
$\Rightarrow 32x + 24 = 35x + 21$
$\Rightarrow 35x - 32x = 24 - 21$
$\Rightarrow 3x = 3$
$\Rightarrow x = \frac{3}{3} = 1$
$\therefore$ Present age of Anil $= 4x$
$= 4 \times 1 = 4$ years

**11.** (1) According to the Karan, his sister's birthday is not after 18th August.
According to their mother, Kran's sister's birthday is on 18th or 19th Auigust.
Common date ⇒ 18 August

**12.** (4) There is no 'M' letter in the given word. Therefore, the word SPECTRUM cannot be formed.
[S] U [P] E R C O N D U C [T O R S] ⇒ SPORTS
[S U P] E R C O [N] D U C [T] O R S ⇒ SPUNT
[S] U P [E R] C O [N] D U C [T] O R S ⇒ STERN

**13.** (2) $(P + E + N) - (T + A + N)$
$= (16 + 5 + 14) - (20 + 1 + 14)$
$= 35 - 35 = 0$
Therefore,
$(D + E + N) - (C + O + B)$
$= (4 + 5 + 14) - (3 + 15 + 2)$
$= 23 - 20 = 3$

**14.** (4)

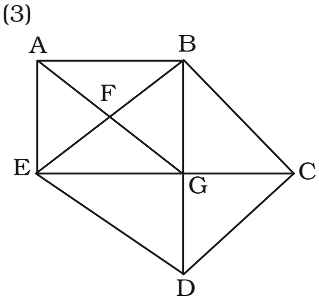
| ÷ ⇒ × | + ⇒ – |
|---|---|
| – ⇒ + | × ⇒ ÷ |

$18 \times 6 \div 8 - 12$
$= 18 \div 6 \times 8 + 12$
$= 3 \times 8 + 12$
$= 24 + 12 = 36$

**15.** (1) 5 # 9 @ 7 = 59 – 7
= 52
3 @ 9 # 2 = 3 – 92
= –89
Therefore,
7 # 6 @ 9 = 76 – 9
= 67

**16.** (1) First Figure
$3 + 17 + 4 + 11 = 35$
Second Figure
$2 + 16 + 7 + 10 = 35$
Third Figure
$6 + 13 + ? + 15 = 35$
$\Rightarrow ? = 35 - 34 = 1$

**17.** (3)




The triangles are :
Δ FBA; Δ FAE; Δ FEG; Δ FGB; Δ BGC; Δ DGC; Δ DGE; Δ CBD; Δ DCE; Δ BEC; Δ AEG; Δ ABG; Δ GBE; Δ AEB; Δ EDB;
Thus, there are 15 triangles in the given figure.

**18.** (1) First and second Premises are Universal Affirmative (A-type).
Third Premise is Universal Negative (E-type).

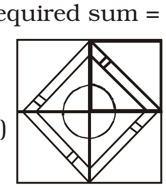
All stars are white.
↙↗
All white are moon.
A + A ⇒ A-type Conclusion
"All stars are moon".
Conclusion I is the Converse of it.

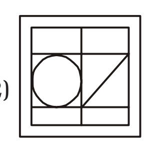
All white are moon.
↙↗
No moon is blue.
A + E ⇒ E-type Conclusion
"No white is blue".

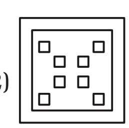
All stars are moon.
↙↗
No moon is blue.
A + E ⇒ E-type Conclusion
"No Star is blue".
Conclusion II is the Converse of it.
Conclusion II is the Converse of the first Premise.

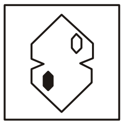
**19.** (1) The numbers 2, 3, 4 and 6 are on the faces adjacent to 5. Therefore, '1' lies opposite '5'.

**20.** (4) Books which are firction can be represented by the numbers common to the circle and the rectangle. Such numbers are 23 and 18.
Required sum = 23 + 18 = 41

**21.** (4)


**22.** (2)


**23.** (2)


**24.** (4) 

**25.** (4) P = 01, 13, 20, 32, 44
A = 04, 11, 23, 30, 42
L = 55, 67, 79, 86, 98
E = 56, 68, 75, 87, 99

| Option | P | A | L | E |
|---|---|---|---|---|
| (1) | 43 | 23 | 55 | 56 |
| (2) | 33 | 30 | 67 | 75 |
| (3) | 11 | 42 | 86 | 98 |
| (4) | 20 | 04 | 79 | 87 |

**26.** (3) The official reserve account, a subdivision of the capital account, is the foreign currency and securities held by the government, usually by its central bank, and is used to balance the payments from year to year.

**27.** (2) Term-Meaning
- Globalisation-Process of interaction and integration among the people, companies and government of different nations
- Privatization-called as denationalization or disinvestment
- Liberalization-Process of reducing or removing restrictions on international trade

**28.** (4) The Governor is not elected by the process of direct or indirect voting (like the Chief Minister, the Prime Minister or the President). The Governor of a particular state is appointed directly by the President of India, for a period of five years. The Governor is the nominal head of a state, while the Chief Minister is the executive head.

**29.** (4) Certiorari means to "certify". Certiorari is a command or order to an inferior Court or tribunal to transmit the records of a cause or matter pending before them to the superior Court to be dealt with there and if the order of inferior Court is found to be without jurisdiction or against the principles of natural justice, it is quashed.

**30.** (3) Being a patron of art and culture, Akbargot a number of literature books written in various languages and constructed numerous architectural masterpieces during his reign, such as Agra Fort, Buland Darwaza, Fatehpur Sikri, Humayun Tomb, Allahabad Fort, Lahore Fort, and his own mausoleum at Sikandra. He started a new sect 'Din-i-Ilahi' by deriving elements from various religions. He did not learn to read or write, but got texts on history, religion, science, philosophy and other topics recited.

**31.** (1) Came into existence in 1943, Singapore, the Azad Hind Fauj was formed to secure Independence from the British rule by allying with axis powers like Japan. It was inspired by the ideologies of Netaji Subhash Chandra Bose.

**32.** (1) The Strait of Malacca is a stretch of water between the Malay Peninsula and the Indonesian island of Sumatra. It is the waterway connecting the Andaman Sea (Indian Ocean) and the South China Sea (Pacific Ocean).

**33.** (2)

**34.** (4) Thyroxine is a hormone the thyroid gland secretes into the bloodstream in Human body. Thyroxine plays a crucial role in heart and digestive function, metabolism, brain development, bone health, and muscle control.
There are five general classes of Plant hormones: auxins, cytokinins, gibberellins, ethylene, and abscisic acid.

**35.** (2) Each of our kidneys contains over a million nephrons. They are the functioning unit of the kidneys. They remove waste from the body and produces urine. Each nephron is made up of two parts: a renal corpuscle and renal tubules

**36.** (4) The most common form of vitamin D is vitamin D3 or cholecalciferol. It is usually produced in the skin of human and animals under the influence of solar or ultraviolet radiation. In plants it can be produced from provitamin ergosterol.

**37.** (1) When light traveling through the air enters a different medium, such as glass or water, the speed and wavelength of light are reduced although the frequency remains unaltered. The speed of light is maximum in vacuum.

**38.** (3) The SI unit for measuring an electric current is the ampere, which is the flow of electric charge across a surface at the rate of one coulomb per second. Electric current is measured using a device called an ammeter.

**39.** (2) The Internet Protocol Address (or IP Address) is a unique address that computing devices such as personal computers, tablets, and smartphones use to identify itself and communicate with other devices in the IP network. The traditional IP Address (known as IPv4) uses a 32-bit number to represent an IP address, and it defines both network and host address.

**40.** (1) Oxidation is the loss of electrons during a reaction by a molecule, atom or ion. Oxidation occurs when the oxidation state of a molecule, atom or ion is increased. The opposite process is called reduction, which occurs when there is a gain of electrons or the oxidation state of an atom, molecule, or ion decreases.

**41.** (2) An anion is an ionic species having a negative charge. They are atoms that have gained electrons. Anions are one of the two types of ions. The other type is called a cation. Anions are attracted to the anode, while cations are attracted to the cathode.

**42.** (3) The main chemicals in air pollution that create acid rain are sulfur dioxide (SO2) and nitrogen (NOx). Acid rain usually forms high in the clouds where sulfur dioxide and nitrogen oxides react with water, oxygen, and oxidants. This mixture forms a mild solution of sulfuric acid and nitric acid.

**43.** (1) Saur Sujala Yojana is a new scheme launched by government in Chhattisgarh for farmers. Under the Saur Sujala Yojana, the state government would provide solar powered irrigation pumps to farmers in Chhatisgarh. The scheme is also aimed at strengthen the agriculture and rural development in rural Chhattisgarh.

**44.** (1) The World Wide Web (WWW) is a network of online content that is formatted in HTML and accessed via HTTP. The term refers to all the interlinked HTML pages that can be accessed over the Internet. The World Wide Web was originally designed in 1991 by Tim Berners-Lee.

**45.** (2) B. Sai Praneeth is Indian badminton player. In 2017, he won the Singapore Open Super Series after beating his compatriot Srikanth Kidambi in rubber games, hence becoming the fourth Indian to win a superseries title after Saina Nehwal, Srikanth Kidambi and P.V.Sindhu

**46.** (4) Nandalal Bose was one of the pioneers of modern Indian art . The artists used gold leaf and colours made from stones to illuminate the text beautifully. Nandalal Bose also drew the emblems for the highest awards given by the Government of India such as Bharat Ratna and Padmashri. He

**47.** (1) The Asian Awards launched in 2010 Paul Sagoo, entrepreneur and founder of the Lemon Group, is now one of the most influential global events celebrating Pan Asian excellence. The Big Bang Theory's Kunal Nayyar was honored the 6th Annual Asian Awards 2017.

**48.** (1) The biography of actress Rekha, 'Rekha : The Untold Story' is written by Yasser Usman, published by Juggernaut.

**49.** (2) The Trans-Pacific Partnership (TPP), currently changed to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) after the US withdrew, is a trade agreement between Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.

**50.** (4) Padmanabhaswamy Temple is located in Thiruvananthapuram, Kerala. The temple is built in an intricate fusion of the indigenous Kerala style and the Dravidian style of architecture associated with the temples located in the neighbouring state of Tamil Nadu, featuring high walls, and a 16th-century Gopuram.

**51.** (2) $16^3 = 4096 = (64)^2$

4096 is the number which is perfect square and perfect cube both.

**52.** (3) 3 men = 4 women

$\Rightarrow$ 1 man = $\frac{4}{3}$ women

$\Rightarrow$ 12 man = $\frac{4}{3} \times 12 = 16$ women

$\therefore$ 12 men and 16 women = 16 + 16 = 32 women

$\therefore$ 4 women will do the work in 120 days

$\therefore$ 32 women will do the work in

$\frac{120 \times 4}{32}$ = 15 days

**53.** (4) Diameter of hemisphere = 21 cm

Radius of hemisphere = $\frac{21}{2}$ cm

Volume of hemisphere = $\frac{2}{3}\pi R^3$

$= \frac{2}{3} \times \frac{22}{7} \times \left(\frac{21}{2}\right)^3$

$= \frac{2}{3} \times \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times \frac{21}{2}$

$= 2425.5 \text{ cm}^3$

**54.** (4) Let the market price be Rs. $x$.

$\therefore$ 88% of 80% of $x$ = 16896

$\Rightarrow x \times \frac{80}{100} \times \frac{88}{100} = 16896$

$\Rightarrow x = \frac{16896 \times 100 \times 100}{80 \times 88}$

$\Rightarrow x$ = Rs. 24000

**55.** (3) Let the distance be $x$ units.

The ratio of speeds of three runners = 3 : 4 : 6

The ratio of time in covering the same distance

$= \frac{x}{3} : \frac{x}{4} : \frac{x}{6}$

$= \frac{1}{3} : \frac{1}{4} : \frac{1}{6}$

$= \frac{12}{3} : \frac{12}{4} : \frac{12}{6} = 4 : 3 : 2$

**56.** (3) Runs scored by 7th player $= 53 \times 7 - (121 + 40 + 26 + 56 + 37 + 48) = 371 - 328 = 43$

**57.** (1) Actual cost price of bicycle = 2700 + 500 = ₹ 3200

Selling price of bicycle = ₹ 3520

Profit per cent

$= \frac{3520 - 3200}{3200} \times 100$

$= \frac{320 \times 100}{3200} = 10\%$

**58.** (2) Let the household spend Rs. 100.

Required percentage decrease

$= \frac{\frac{100}{24} - \frac{100}{36}}{\frac{100}{24}} \times 100$

$$= \frac{\frac{6-4}{144}}{\frac{1}{24}} \times 100$$

$$= \frac{2}{144} \times 24 \times 100$$

$$= \frac{100}{3} = 33.33\%$$

**59.** (3) Let the speed of car be $x$ km/hr

$\therefore$ Speed of train

$$= x \times \frac{120}{100} = \frac{6x}{5} \text{ km/hr}$$

$$\therefore \frac{180}{x} = \frac{180}{\frac{6x}{5}} + \frac{30}{60}$$

$$\Rightarrow \frac{180}{x} = \frac{150}{x} + \frac{1}{2}$$

$$\Rightarrow \frac{180}{x} - \frac{150}{x} = \frac{1}{2}$$

$$\Rightarrow \frac{180-150}{x} = \frac{1}{2}$$

$\Rightarrow x = 2 \times 30 = 60$ km/hr

Speed of train $= \frac{6x}{5} = \frac{6 \times 60}{5}$

= 72 km/hr

**60.** (2) S.I. = 882 – 720 = ₹ 162

$$\text{Rate} = \frac{\text{S.I.} \times 100}{\text{T} \times \text{P}} = \frac{162 \times 100}{\frac{3}{2} \times 720}$$

= 15%

Again, S.I. = 1040 – 800 = ₹ 240

$$\text{Time} = \frac{\text{S.I.} \times 100}{\text{T} \times \text{P}}$$

$$= \frac{240 \times 100}{15 \times 800} = 2 \text{ years}$$

**61.** (2) $\left(\frac{x}{y}\right)^{a-4} = \left(\frac{y}{x}\right)^{2a-5}$

$$\Rightarrow \left(\frac{x}{y}\right)^{a-4} = \left(\frac{x}{y}\right)^{5-2a}$$

$\Rightarrow a - 4 = 5 - 2a$

$\Rightarrow 3a = a$

$\Rightarrow a = 3$

Relation between $x$ and $y$ cannot be found.

**62.** (1) $x + \frac{1}{x} = 3$

$\Rightarrow x^2 + 1 = 3x$ ...(i)

$$\Rightarrow x + \frac{1}{x} = 3$$

Squaring both sides,

$$x^2 + \frac{1}{x^2} + 2 = 9$$

$$\Rightarrow \frac{x^4+1}{x^2} = 9 - 2 = 7$$

$\Rightarrow x^4 + 1 = 7x^2$ ...(ii)

$\therefore$ Expression

$$= \frac{x^4 + 5x^3 + 3x^2 + 5x + 1}{x^4 + 1}$$

$$= \frac{x^4 + 1 + 5x(x^2+1) + 3x^2}{x^4+1}$$

$$= \frac{7x^2 + 5x \times 3x + 3x^2}{7x^2}$$

$$= \frac{25x^2}{7x^2} = \frac{25}{7}$$

**63.** (4) $3a - \frac{3}{a} - 3 = 0$

$$\Rightarrow 3a - \frac{3}{a} = 3$$

$$a - \frac{1}{a} = 1$$

Cubing both sides

$$\left(a - \frac{1}{a}\right)^3 = (1)^3$$

$$\Rightarrow a^3 - \frac{1}{a^3} - 3\left(a - \frac{1}{a}\right) = 1$$

$$\Rightarrow a^3 - \frac{1}{a^3} - 3 = 1$$

$$\Rightarrow a^3 - \frac{1}{a^3} = 4$$

$$\Rightarrow a^3 - \frac{1}{a^3} + 2 = 4 + 2 = 6$$

**64.** (3) $\frac{x + \sqrt{x^2-1}}{x - \sqrt{x^2-1}} \times \frac{x + \sqrt{x^2-1}}{x + \sqrt{x^2-1}}$

$$+ \frac{x - \sqrt{x^2-1}}{x + \sqrt{x^2-1}} \times \frac{x - \sqrt{x^2-1}}{x - \sqrt{x^2-1}}$$

= 194

$$\Rightarrow \frac{\left(x + \sqrt{x+1}\right)^2}{x^2 - x^2 + 1} + \frac{\left(x + \sqrt{x-1}\right)^2}{x^2 - x^2 + 1} = 194$$

$\Rightarrow 2(x^2 + x^2 - 1) = 194$

$[\because (a+b)^2 + (a-b)^2 = 2(a^2+b^2)]$

$$\Rightarrow 2x^2 - 1 = \frac{194}{2} = 97$$

$\Rightarrow 2x^2 = 98$

$$\Rightarrow x^2 = \frac{98}{2} = 49$$

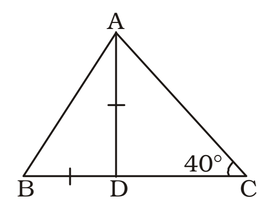
$$\Rightarrow x = \sqrt{49} = 7$$

**65.** (3) AD $= \frac{1}{2}$ BC

AD = BD

$\angle$ABD = $\angle$BAD = $x$

AD = DC




$\angle$DAC = $\angle$ACD = 40°

$\therefore$ $\angle$ADC = 180° –80° = 100°

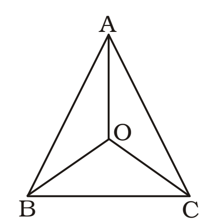
$\therefore$ $\angle$ADC = $\angle$BAD + $\angle$ABD

$\Rightarrow 2x = 100°$

$\Rightarrow x = 50° = \angle$DAB

**66.** (2) O is circumcentre.

$\therefore$ OA = OB = OC




$\angle$OAC = $\angle$OCA = $x$

$\angle$OAB = $\angle$OBA = $y$

$\angle$OBC = $\angle$OCB = $z$

$\Rightarrow 2(x + y + z) = 180°$

$\Rightarrow x + y + z = 90°$ ...(1)

$\therefore y + z = 180° - (75° + 80°)$

= 25° ...(2)

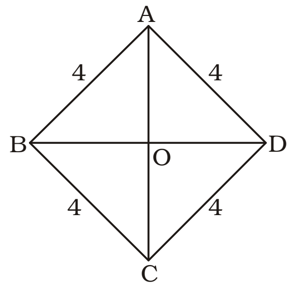
$\therefore x = 90° - 25° = 65°$

$\therefore$ $\angle$OAC = 65°

**67.** (4) Side of rhombus = BC = 4 cm

$\Delta$ABC, is an equilateral triangle.

AC = 4 cm.




$\angle ABC = \angle ACB = \angle BAC = 60°$

$OC = \frac{4}{2} = 2$ cm.

In $\Delta BOC$,
$\angle BOC = 90°$

$\sin 60° = \frac{OB}{BC}$

$OB = BC \sin 60°$

$= 4 \times \frac{\sqrt{3}}{2} = 2\sqrt{3}$

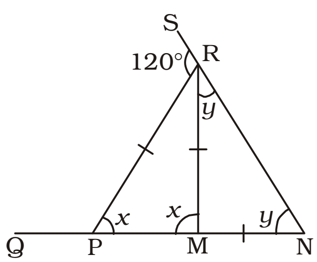
$BD = 2 \times 2\sqrt{3} = 4\sqrt{3}$

Area of equilateral triangle

$= \frac{\sqrt{3}}{4} \times a^2 = \frac{\sqrt{3}}{4} \times (4\sqrt{3})^2$

$= 12\sqrt{3}$ cm²

**68.** (2)




RP = RM
$\therefore \angle RPM = \angle RMP = x$
MN = MR
$\angle MNR = \angle MRN = y$
$PRM = 180° - 2x$
$= 180° - (102° + y)$
$\Rightarrow 180° - 2x = 78° - y$
$\Rightarrow 2x - y = 102°$ ...(i)
$\Rightarrow x + y = 102°$ ...(ii)
(Exterior angle = sum of two other interior angles)
By equations (i) + (ii), we have
$\Rightarrow 3x = 204°$

$\Rightarrow x = \frac{204°}{3} = 68°$

$\Rightarrow \angle MPR = 68°$

**69.** (1) $(\cos A + \sin A)(\cot A + \tan A)$

$= (\cos A + \sin A)\left(\frac{\cos A}{\sin A} + \frac{\sin A}{\cos A}\right)$

$= (\cos A + \sin A)\left(\frac{\cos^2 A + \sin^2 A}{\sin A \cos A}\right)$

$= \frac{\cos A + \sin A}{\sin A \cos A}$

$= \frac{\cos A}{\sin A \cos A} + \frac{\sin A}{\sin A \cos A}$

$= \frac{1}{\sin A} + \frac{1}{\cos A}$

$= \text{cosec } A + \sec A$

**70.** (1) $\sqrt{\frac{\text{cosec } A}{\text{cosec } A - 1} + \frac{\text{cosec } A}{\text{cosec } A + 1}}$

$= \sqrt{\frac{\text{cosec}^2 A + \text{cosec } A + \text{cosec}^2 A - \text{cosec } A}{(\text{cosec } A - 1)(\text{cosec } A + 1)}}$

$= \sqrt{\frac{2\text{cosec}^2 A}{\text{cosec}^2 A - 1}} = \sqrt{\frac{2\text{cosec}^2 A}{\cot^2 A}}$

$= \sqrt{\frac{\frac{2}{\sin^2 A}}{\frac{\cos^2 A}{\sin^2 A}}} = \sqrt{\frac{2}{\sin^2 A} \times \frac{\sin^2 A}{\cos^2 A}}$

$= \sqrt{2\sec^2 A} = \sqrt{2} \sec A$

**71.** (1) $2\cos\theta = 2 - \sin\theta$
$\Rightarrow \sin\theta = 2 - 2\cos\theta$
$\Rightarrow \sin\theta = 2(1 - \cos\theta)$
$\because \sin^2\theta + \cos^2\theta = 1$
$\Rightarrow [2(1 - \cos\theta)]^2 + \cos^2\theta = 1$
$\Rightarrow 4(1 + \cos^2\theta - 2\cos\theta) + \cos^2\theta = 1$
$\Rightarrow 4\cos^2\theta - 8\cos\theta + 4 + \cos^2\theta - 1 = 0$
$\Rightarrow 5\cos^2\theta - 8\cos\theta + 3 = 0$
$\Rightarrow 5\cos^2\theta - 5\cos\theta - 3\cos\theta + 3 = 0$
$\Rightarrow 5\cos\theta(\cos\theta - 1) - 3(\cos\theta - 1) = 0$
$\Rightarrow (\cos\theta - 1)(5\cos\theta - 3) = 0$

$\Rightarrow \cos\theta = 1$ or $\cos\theta = \frac{3}{5}$

**72.** (1) In year 3,
Total trade = 1183 crore dollars
$\Rightarrow 4x + 3x = 1183 \Rightarrow 7x = 1183$

$\Rightarrow x = \frac{1183}{7} = 169$

Difference between exports and imports
$= 4x - 3x = x = 169$ crore dollar

**73.** (4) For year 4,

$\frac{\text{Exports}}{\text{Imports}} = \frac{5}{8}$

$\frac{315}{\text{Imports}} = \frac{5}{8}$

Imports = 63 × 8
= 504 crore dollars
Total trade of year 4
= 315 + 504 = 819 crore dollars

Imports of year 2 = $\frac{819}{18} \times 7$

= 318.5 crore dollar

**74.** (2) Exports of year 1

$= \frac{5700}{19} \times 10 = 3000$ crore dollars

Exports of year 5

$= \frac{2850}{25} \times 12 = 1368$ crore dollars

Required difference = 3000 – 1368 = 1632 crore dollars

**75.** (1) Average Exports

$= \frac{2000 + 2200 + 1600 + 1500 + 2400}{5}$

$= \frac{9700}{5} = 1940$ crore dollars

Average Imports

$= \frac{1800 + 1400 + 1200 + 2400 + 2600}{5}$

$= \frac{9400}{5} = 1880$ crore dollars

Required difference
= 1940 – 1880
= 60 crore dollars

**76.** (3) Let's see possible structures with 'prefer':

I. Sub + prefer + V-ing form + to + V = ing form
**Look at the sentence :**
I prefer reading biographies to watching films.

II. Sub + prefer + V-ing form + rather than + V-ing form
**Look at the sentence :**
I prefer reading biographies rather than watching films.

III. Sub + prefer + to-infinitive + rather than + infinitive without to

**Look at the sentence :**
I prefer to read biographies rather than watch films.
So, we can use either structure I or structure II in place of the given sentence.
Correct expression — rather than going out...
or
reading to going out...

**77.** (2) junior/senior/inferior/superior— always followed by preposition 'to' not than.
So, correct expression is — junior to Mukesh...

**78.** (1) **Immanent (Adjective)** = (of God) pervasive; pervading omnipresent.
**Mortal (Adjective)** = perishable; earthly
**Imminent (Adjective)** = about to happen
**Deference (Noun)** = respect; respectfulness.

**79.** (2) **Pass (Verb)** = (of a candidate) be successful in an examination, a test, etc.
**Complete (Verb)** = finish making or doing.
**Obtain (Verb)** = acquire; get.
**Gather (Verb)** = collect; assemble; converge

**80.** (2) **Articulate/distinct (Adjective)** = lucid; coherent
**Look at the sentence :**
She is not very articulate.
**Dominate (Verb)** = control; influence.
**Helpers (Noun)** = attendants; assistants.
**Unsteady (Adjective)** = unstable; rocky; unreliable.

**81.** (2) **Ascend/climb (Verb)** = go up; rise up.
**Look at the sentence :**
She ascended the stairs.
**Weaken (Verb)** = enfeeble; debilitate.
**Void (Noun)** = gap; empty space.

**82.** (4) **Solemn (Adjective)** = serious; earnest.
**Flippant/jocular/whimsical/waggish (Adjective)** = humorous in a playful manner; frivolous.
**Look at the sentence :**
A waggish joker.

**83.** (1) **Profane/befoul/defile/desecrate (Verb)** = violate; treat with disrespect.
**Look at the sentence :**
More than 300 graves were desecrated.
**Sanctify (Verb)** = consecrate; make holy
**Look at the sentence :**
A small shrine was built to sanctify the site.

**84.** (1) Something that is impossible to get or achieve.
**Look at the sentence :**
Providing employment to every Tom, Dick and Harry is will–o'-the-wisp'.

**85.** (2) **to experience many dangers in order to achieve**
**Look at the sentence :**
Aladdin had to go through fire and water in order to get back his wife.

**86.** (4) **Agree with** → a person
**Agree to** → something (demand, query, etc.)
**Agree on** → some issue or point of debate

**87.** (3) **either writes**
'either' is followed by a singular verb, not a plural verb, such as
**Look at the sentence :**
Either of the friends is rich.
Either road leads to the station.

**88.** (3) **Implosion (Noun)** = something collapsing violently inwards.
**Trickle (Verb)** = drip; dribble; drizzle.
**Mantle (Noun)** = cloak; cape.

**89.** (2) **Orophobia (Noun)** = fear of victory/happiness/wealth.
**Batrachophobia (Noun)** = fear of amphibians.
**Phemophobia (Noun)** = fear of voices.

**90.** (1) Correct spelling : bulletin

**91.** (3) Correct spelling : handkerchief

**94.** (1) The police arrested John on a charge of murder, but for a lack of evidence released him.
It is passive voice of simple past tense.
Its active voice is formed as follows :
subject + $V_2$ + object
Here, the police (subject) is understood.

**95.** (1) He said that he had seen a snake there.
It is direct speech of an assertive sentence.
Its indirect speech is formed as follows :
⇒ 'that' connector is used
⇒ Simple past tense changes to past perfect tense as reporting verb is in past tense.
⇒ 'here' changes to 'there'
⇒ 'I' changes to 'he, as per $\frac{S\ O\ N}{1\ 2\ 3}$

**96.** (2) **Identified**
**identify with something (phrasal verb)** = to think of something as being the same as something else
⇒ Truthfulness is identified with nobility.
**Discuss (Verb)** = talk over; talk about
**Recognize (Verb)** = identify; know
**Rectify (Verb)** = improve; put right; correct

**97.** (4) **Notion (N)** = idea; belief
**Source (N)** = origin
**Collection (Noun)** = the action/process of collecting
**Requirement (Noun)** = need; demand; want

**98.** (2) **Wrong (Adjective)** = incorrect; mistaken
**Neutral (Adjective)** = unbirased; unprejudiced
**Different (Adjective)** = dissimilar; unlike
**Right (Adjective)** = just; fair

**99.** (1) **Merely (Adverb)** = only; purely
**Essentially (Adverb)** = absolutely; necessarily
surely (Adverb) = certainly
**Hardly (Adverb)** = scarcely; barely

**100.** (4) **Immoral (Adjective)** = bad; evil; not moral
**Relevant (Adjective)** = proper; up to mark
**Acquired (Adjective)** = obtained; got
**Justifiable (Adjective)** = valid; legitimate

❏❏❏

SET **12**

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 10.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Pressure : Barometer :: ? : Odometer
(1) Humidity (2) Distance
(3) Thickness (4) Wind

**2.** In the following question, select the related letters from the given alternatives :
AEDM : ZQRN :: FLMO : ?
(1) BZYS (2) CZYS
(3) SZYB (4) YZBC

**3.** In the following question, select the related number from the given alternatives :
243 : 508 :: 163 : ?
(1) 291 (2) 326
(3) 347 (4) 443

**4.** In the following question, select the odd word from the given alternatives :
(1) Flower (2) Fruit
(3) Leaves (4) Root

**5.** In the following question, select the odd letters from the given alternatives :
(1) CEAC (2) FHDF
(3) PRMP (4) TVRT

**6.** In the following question, select the odd number-pair from the given alternatives :
(1) 2132 – 161
(2) 2678 – 672
(3) 4325 – 120
(4) 6931 – 162

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Dillydallying
2. Dillydallied
3. Dillydally
4. Dilled
5. Dillydallies

(1) 42351 (2) 42531
(3) 45312 (4) 45321

**8.** In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
*l m_o_n m _ l _ n _ _ n m l*
(1) *molnon* (2) *nolmoo*
(3) *nomloo* (4) *noolmm*

**9.** In the following question, select the missing number from the given alternatives :
21, 25, 52, 68, 193, ?
(1) 229 (2) 242
(3) 257 (4) 409

**10.** Kamal starts walking from his home facing west direction. After walking 10 km he takes a right turn and walks another 10 km. He takes another right turn and walks 10 km to reach his school. How far (in km) and in which direction is he from his home?
(1) 10, North
(2) 10, South
(3) 20, North-East
(4) 20, South-West

**11.** In a class, P has more marks than Q and R does not have the least marks. S has more marks than T and T has more marks than P, who among them will have the least marks?
(1) P (2) Q
(3) S (4) T

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**RECIPROCATE**
(1) PROCEED
(2) RACE
(3) REPEAT
(4) TEAR

**13.** In a certain code language, "CASIO" is written as "3119915". How is "CITIZEN" written in that code language?
(1) 295629134
(2) 3192295614
(3) 3912659214
(4) 3920926514

**14.** In the following question, correct the equation by interchanging the two signs.
$6 \div 17 \times 51 + 6 - 12 = -4$
(1) × and ÷ (2) + and ÷
(3) + and – (4) – and ÷

**15.** If $6 * 9 - 4 = 58$ and $3 * 9 - 7 = 34$, then in the expression $A * 4 - 9 = 91$, what is the value of 'A'?
(1) 6.5 (2) 17.5
(3) 20.5 (4) 30.5

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

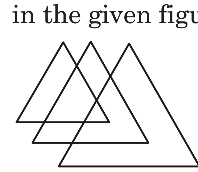
|   | 6 |   |
|---|---|---|
| 5 | 93 | 7 |
|   | 9 |   |

|   | 9 |   |
|---|---|---|
| 8 | 65 | 7 |
|   | 6 |   |

|   | 3 |   |
|---|---|---|
| ? | 63 | 6 |
|   | 5 |   |

(1) 4 (2) 6
(3) 8 (4) 16

**17.** How many triangles are there in the given figure ?



(1) 4 (2) 5
(3) 6 (4) 7

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from comonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

**Statements :**

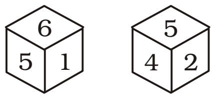
I. Some staplers are pins.
II. All pins are markers.

**Conclusions :**

I. Some staplers are markers.
II. All markers are pins.

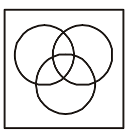
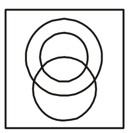
(1) Only Conclusion I follows.
(2) Only Conclusion II follows.
(3) Neither Conclusion I nor Conclusion II follows.
(4) Both Conclusions follow.

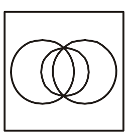
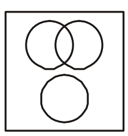
**19.** Two positions of a cube are shown below. What will come opposite to face containing '4'?



(1) 1 (2) 2
(3) 3 (4) 6

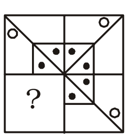
**20.** Identify the diagram that best represents the relationship among the given classes.
Green, Mango, Fruits

(1)  (2) 

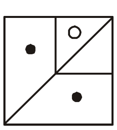
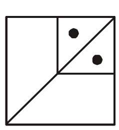
(3)  (4) 

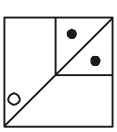
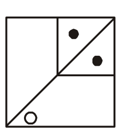
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



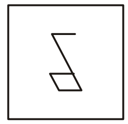
**Answer Figures :**

(1)  (2) 

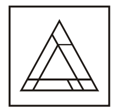
(3)  (4) 

**22.** From the given answer figures, select the one in which the question figure is hidden/ embedded.

**Question Figure :**



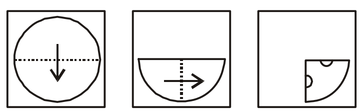
**Answer Figures :**

(1) (2) 

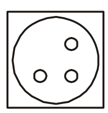
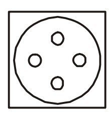
(3) (4)

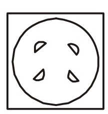
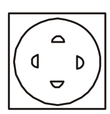
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



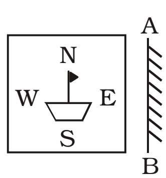
**Answer Figures :**

(1)  (2) 

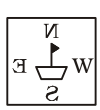
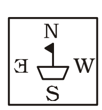
(3)  (4) 

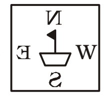
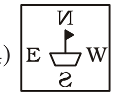
**24.** If a mirror is placed on the line AB, then which of the answer figure is the right image of the given figure?

**Question Figure :**



**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix–I are numbered from 0 to 4 and that of Matrix–II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'A' can be represented by 20, 43 etc and 'U' can be represented by 68, 87 etc. Similarly, you have to identify the set for the word **'GUIDE'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | G | L | A | R | E |
| 1 | L | A | R | E | G |
| 2 | A | R | E | G | L |
| 3 | R | E | G | L | A |
| 4 | E | G | L | A | R |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | B | U | I | L | D |
| 6 | L | D | B | U | I |
| 7 | U | I | L | D | B |
| 8 | D | B | U | I | L |
| 9 | I | L | D | B | U |

(1) 00, 68, 95, 58, 04
(2) 14, 75, 88, 87, 40
(3) 23, 99, 76, 78, 31
(4) 41, 87, 57, 66, 12

## GENERAL AWARENESS

**26.** In which market form, a market or industry is dominated by a few firms?
(1) Perfect Competition
(2) Monopoly (3) Oligopoly
(4) Monopolistic

**27.** Which amongst the following is not a component of monetary policy in India?
(1) Reporate
(2) Moral suasion
(3) Credit Rationing
(4) Public Debt

**28.** Who among the following is not a member of any of the two houses of our country?
(1) Prime Minister
(2) Finance Minister
(3) President
(4) Railway Minister

**29.** Which article of Indian constitution has the provision for National Emergency?
(1) Article 350
(2) Article 352
(3) Article 312
(4) Article 280

**30.** Who led the Bardoli Satyagraha movement?
(1) Mahatma Gandhi
(2) Rabindra Nath Tagore
(3) Sardar Vallabhbhai Patel
(4) Chittaranjan Das

**31.** Who is known as the 'Father of Indian Unrest'?
(1) Anant Singh
(2) Bal Gangadhar Tilak
(3) Bhagat Singh
(4) Dadabhai Naoroji

**32.** Which of the following region is covered by tropical evergreen forest?
(1) Eastern Ghat
(2) Vindhyanchal
(3) Aravalli
(4) Western Ghat

**33.** The final boundary between the Earth and the outer space is called _____.
(1) magnetosphere
(2) ionosphere
(3) mesopause
(4) magnetopause

**34.** What is the name of the hormone produced by thymus gland?
(1) Thyroxine
(2) Auxins
(3) Cytokinins
(4) Thymosin

**35.** Photosynthesis takes place in the presence of chlorophyll and
(1) water
(2) nutrients
(3) carbon-dioxide
(4) sunlight

**36.** Which blood group is universal acceptor?
(1) $O^+$ (2) $O^-$
(3) $AB^-$ (4) $AB^+$

**37.** If objects appear enlarged and inverted in a rear view mirror, then which type of mirror is used?
(1) Concave (2) Convex
(3) Cylindrical
(4) Plane

**38.** Soap bubble attains spherical shape due to ______.
(1) inertia (2) pressure
(3) surface tension
(4) viscosity

**39.** CAD stands for _____.
(1) Common Aided Design
(2) Computer Aided Design
(3) Complex Aided Design
(4) Communication Aided Design

**40.** Which of the following is a characteristic of an exothermic reaction?
(1) Release of heat
(2) Absorption of heat
(3) Doesn't involve any change in temperature
(4) None of the option is correct

**41.** What is the chemical formula for Sodium Chloride (Salt)?
(1) $NaCl_2$ (2) NaCl
(3) $Na_2Cl$ (4) $Na_2C$

**42.** Which of the following gas contributes the maximum to the phenomena of global warming?
(1) Methane
(2) Chlorofluorocarbon (CFC)
(3) Nitrogen dioxide
(4) Carbon dioxide

**43.** Who selects the Social Audit Committee under MGNREGA scheme?
(1) Chief Minister
(2) Gram Sabha
(3) Mayor
(4) B .D.O.

**44.** Which of the following was invented by Sir Humphry Davy?
(1) Safety Pin
(2) Steam Engine
(3) Safety Lamp
(4) X-Rays

**45.** Who has won the 2016 Men's Single title at US Open?
(1) Novak Djokovic
(2) Rafael Nadal
(3) Stan Wawrinka
(4) Andy Murray

**46.** Match the following :

| Dancer | Dance |
|---|---|
| 1. Radha Reddy | a. Bharatnatyam |
| 2. Padma Subrahmanyam | b. Kathak |
| 3. Sitara Devi | c. Kuchipudi |

(1) 1-b, 2- a, 3-c
(2) 1-c, 2-b, 3-a
(3) 1-c, 2-a, 3-b
(4) 1-a, 2-c, 3-b

**47.** Who has recently been awarded with Nobel Prize for peace in 2016?
(1) Juan Manuel Santos
(2) Henry Dunant
(3) Kailash Satyarthi
(4) Malala Yousefzai

**48.** Which of the following is a book written by Shashi Tharoor?
(1) It's Not About You
(2) Invisible People
(3) An Era of Darkness
(4) Democrats and Dissenters

**49.** With which country India has recently decided to partner with for strategic storage of crude oil in southern India?
(1) Iran
(2) Iraq
(3) United Arab Emirates
(4) United States of America

**50.** Which neighbouring country of India is also reffered as 'Druk Yul'?
(1) Myanmar
(2) Maldives
(3) Bhutan (4) Afghanistan

## QUANTITATIVE APTITUDE

**51.** How many numbers are there between 1 and 200 which are divisible by 3 but not by 7?
(1) 38 (2) 45
(3) 57 (4) 66

**52.** 10 women can do a piece of work in 6 days, 6 men can do same work in 5 days and 8 children can do it in 10 days. What is the ratio of the efficiency of a woman, a man and a child respectively?
(1) 4 : 6 : 3 (2) 4 : 5 : 3
(3) 2 : 4 : 3 (4) 4 : 8 : 3

**53.** The ratio of the volumes of two cylinders is 7 : 3 and the ratio of their heights is 7 : 9. If the area of the base of the second cylinder is 154 $cm^2$, then what will be the radius (in cm) of the first cylinder?
(1) $6\sqrt{2}$ (2) $6\sqrt{3}$
(3) $7\sqrt{2}$ (4) $7\sqrt{3}$

**54.** Kanchan bought a clock with 25% discount on marked price. She sold it with 75% gain on the price she bought. What was her profit percentage on the marked price?
(1) 31.25 (2) 50
(3) 56 .25 (4) 60

**55.** A, B and C received an amount of Rs. 8400 and distributed among themselves in the ratio of 6 : 8 : 7 respectively. If they save in the ratio of 3 : 2 : 4 respectively and B saves Rs. 400, then what is the ratio of the expenditures of A, B and C respectively?
(1) 6 : 8 : 7 (2) 8 : 6 : 7
(3) 9 : 14 : 10 (4) 12 : 7 : 9

**56.** The average age of 24 students is 12 years. It was observed that while calculating the average age, the age of a student was taken as 14 years instead of 8 years. What will be the correct average age (in years)?
(1) 11.25 (2) 11.5
(3) 11.75 (4) 12.25

**57.** 70% of the cost price of a article is equal to the 40% of its selling price. What is the profit or loss per cent ?
(1) 63% loss (2) 70% loss
(3) 75% profit (4) 80% profit

**58.** $a\%$ of $b$ + $b\%$ of $a$ = ______
(1) $2a\%$ of $b$ (2) $2a\%$ of $2b$
(3) $2a\%$ of $2a$ (4) $2b\%$ of $2b$

**59.** If I walk at $\frac{7}{6}$ of my usual speed, then I reach my office 15 minutes early. What is the usual time taken (in minutes) by me to reach the office?
(1) 60 (2) 75
(3) 90 (4) 105

**60.** A person lent Rs. 10000 to B for 3 years and Rs. 6000 to C for 4 years on simple interest at same rate of interest and received Rs. 5400 in all from both of them as interest. What is the rate of interest (in %)?
(1) 10 (2) 12.5
(3) 15 (4) 20

**61.** If $x^3 + 2x^2 - 5x + k$ is divisible by $x + 1$, then what is the value of $k$?
(1) –6 (2) –1
(3) 0 (4) 6

**62.** If $3x + \left[\frac{1}{(5x)}\right] = 7$, then what is the value of $\frac{5x}{(15x^2 + 15x + 1)}$?
(1) $\frac{1}{5}$ (2) $\frac{1}{10}$
(3) $\frac{2}{5}$ (4) 10

**63.** If $x + \left[\frac{1}{(4x)}\right] = \frac{5}{2}$, then what is the value of $\frac{(64x^6 + 1)}{8x^3}$?
(1) 110 (2) 115
(3) 125 (4) 140

**64.** If $x^2 + x = 19$, then what is the value of $(x + 5)^2 + \left[\frac{1}{(x+5)^2}\right]$?
(1) 77 (2) 79
(3) 81 (4) 83

**65.** In triangle ABC, AD, BE and CF are the medians intersecting at point G and area of triangle ABC is 156 $cm^2$. What is the area (in $cm^2$) of triangle FGE?
(1) 13 (2) 26
(3) 39 (4) 52

**66.** In triangle ABC, $\angle ABC = 15°$. D is a point on BC such that AD = BD. What is the measure of $\angle ADC$ (in degrees)?
(1) 15 (2) 30
(3) 45 (4) 60

**67.** The length of diagonal of a square is $9\sqrt{2}$ cm. The square is reshaped to form a triangle. What is the area (in $cm^2$) of largest incircle that can be formed in that triangle?
(1) $6\pi$ (2) $9\pi$
(3) $12\pi$ (4) $15\pi$

**68.** The length of the common chord of two intersecting circles is 12 cm. If the diameters of the circles are 15 cm and 13 cm, then what is the distance (in cm) between their centres?
(1) $\frac{7}{2}$ (2) 7
(3) $7\sqrt{2}$ (4) 14

**69.** What is the simplified value of $\sec^4\theta - \sec^2\theta \tan^2\theta$?
(1) $\text{cosec}^2\theta$ (2) $\sec^2\theta$
(3) $\cot^2\theta$ (4) $\sec\theta \tan\theta$

**70.** What is the simplified value of (sin A – cosec A) (sec A – cos A) (tan A + cot A)?
(1) 1 (2) –1
(3) 0 (4) 2

**71.** If $\left(\frac{1}{\cos\theta}\right) - \left(\frac{1}{\cot\theta}\right) = \frac{1}{P}$, then what is the value of $\cos\theta$?
(1) $\frac{(P+1)}{P-1}$ (2) $\frac{(P^2+1)}{2P}$
(3) $\frac{2(P^2+1)}{P}$ (4) $\frac{2P}{(P^2+1)}$

**Directions (72 –75) :** The table given below represents the production and sales of wheat in 4 different countries A, B, C and D over a period of 4 years. At the end of year 2010 A, B, C and D had a stock of 5200, 3500, 7835 and 1956 (in '000 quintals) of wheat respectively. For any given year, the stock of wheat is calculated as :

Stock of year ($n$ + 1) = stock at end of year ($n$) + production in year ($n$ + 1) – sales in year ($n$ + 1)

And, Surplus of year ($n$) = production in year ($n$) – sales in year ($n$)

**Wheat production and sales (in '000 quintals)**

| Year | Country A | | Country B | | Country C | | Country D | |
|---|---|---|---|---|---|---|---|---|
| | Prod. | Sales | Prod. | Sales | Prod. | Sales | Prod. | Sales |
| 2011 | 1218 | 1413 | 1881 | 1798 | 2035 | 2247 | 3126 | 2417 |
| 2012 | 1554 | 1783 | 2067 | 2389 | 1821 | 2018 | 2987 | 2911 |
| 2013 | 1671 | 1641 | 1328 | 2063 | 1937 | 2563 | 2143 | 3188 |
| 2014 | 1103 | 1002 | 1578 | 1239 | 3014 | 2988 | 4126 | 3563 |

**72.** What is the surplus (in '000 quintals) of country A of years 2013 and 2014 taken together?

(1) 122 (2) 131

(3) 143 (4) 158

**73.** What is the stock (in '000 quintals) of country C at end of the four year period?

(1) 5926 (2) 6213

(3) 6826 (4) 8844

**74.** What is the difference (in '000 quintals) in average production and average sales respectively of country C in the given four years?

(1) –252.25

(2) – 415.50

(3) 350.75

(4) 275.25

**75.** What can be said about total surplus of country B and country D over the 4 years?

(1) Surplus of B = Surplus of D

(2) Surplus of D > Surplus of B

(3) Surplus of B > Surplus of D

(4) No relation is there

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** Inspite of the doctor's stern warning (1)/ Latika continued taking (2)/ sugars in her milk. (3)/ No Error (4)

**77.** Myself and Roshni (1)/ will take care of (2)/ the event on Sunday. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** _____ the rain stopped, the concert had to be suspended.

(1) Until (2) Unless

(3) Till (4) While

**79.** The elephant stampeded and tore _____ the streets.

(1) on (2) out

(3) off (4) down

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Scuttle**

(1) Solitary (2) Superficial

(3) Soothing (4) Brazier

**81. Loquacious**

(1) Talkative

(2) Foolishness

(3) Graceful

(4) Entertainer

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Obfuscate**

(1) Envelop (2) Puzzle

(3) Haze (4) Clarify

**83. Triumph**

(1) Establish (2) Sorrow

(3) Disdain (4) Elation

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

**84. Chicken-hearted**

(1) Coward

(2) Short tempered

(3) Composed

(4) Bold

**85. Red letter day**

(1) Starting day

(2) Holiday

(3) Significant day

(4) Ending day

**Directions (86–87) :** Improve the bracketed part of each sentence.

**86.** He jumped off the train while it **(had been running)**.

(1) has been running

(2) ran

(3) was running

(4) No improvement

**87.** I **(didn't see)** him since we met two years ago.

(1) am not seeing

(2) have not seen

(3) had not seen

(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. One who is new to a profession**

(1) Nuance (2) Pun

(3) Tyro (4) Vandal

**89. A speech or a presentation made without previous preparation.**
(1) Euphemism
(2) Obituary
(3) Extempore
(4) Soliloquy

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Millionaire
(2) Omission
(3) Foreign
(4) Proprietry

**91.** (1) Acquaintence
(2) Appeasement
(3) Abnormality
(4) Accentuate

**Directions (92–93) :** Each question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P: And the victims are likely to be the poorest of the poor as well as the very sources of water- rivers, wetlands and aquifers.
Q: In India, water conflicts are likely to worsen before they begin to be resolved.
R: Till then they pose a significant threat to economic growth, security and health of the ecosystem.
S: Water is radically altering and affecting political boundaries all over world, between as well as within countries.
(1) SQPR (2) PRQS
(3) QRPS (4) PSQR

**93.** P: For one, very few entrepreneurs are willing to take on a new outsource, unless it comes with a guarantee of a certain level of sales.
Q: This invariably acts as an incentive for outsources to be lax in developing the business.
R: Despite being the dominant partner in the relationship, the outsourcer doesn't always have all the advantages.
S: The trade refers to it as the minimum guarantee clause, which means that if a outsourcee is unable to reach an anticipated sales level, he will be compensated for the balance amount.
(1) PRQS (2) SPQR
(3) QSPR (4) RPSQ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
Somebody told me that there had been a robbery in the jewellery exhibition.
(1) I was informed that there was a robbery in the jewellery exhibition.
(2) I was told by somebody that there had been a robbery in the jewellery exhibition.
(3) I was told by somebody about a robbery in the jewellery exhibition.
(4) I was told about a robbery in the jewellery exhibition.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
Rohan said, "Where shall I be this time next month"
(1) Rohan contemplated where shall he be that time the following month.
(2) Rohan asked that where should be that time next month.
(3) Rohan wondered where he should be that time the next month.
(4) Rohan wondered where he would be that time the following month.

**Directions (96–100) :** In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The modes of action are **(96)** in science and religion. Science relies on experiment, whereas religion is based on experience. Any religious **(97)** whether it is Christ's or Ramakrishna's is personal and **(98)**. Science, on the other hand is marked by objectivity. Theory has to be corroborated by **(99)** proof providing material comforts. The frontiers of science do not end in knowledge but are **(100)** to the formation of appliances for actual use.

**96.** (1) similar (2) different
(3) equal (4) relevant

**97.** (1) experience (2) thought
(3) festival (4) activity

**98.** (1) significant
(2) irrelevant
(3) subjective
(4) objective

**99.** (1) intangible
(2) transparent
(3) tangible
(4) unique

**100.** (1) implied
(2) associated
(3) designated
(4) extended

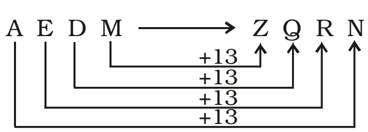
## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (1) | **3.** (2) | **4.** (4) |
| **5.** (3) | **6.** (1) | **7.** (2) | **8.** (2) |
| **9.** (1) | **10.** (1) | **11.** (2) | **12.** (1) |
| **13.** (4) | **14.** (1) | **15.** (3) | **16.** (1) |
| **17.** (3) | **18.** (1) | **19.** (1) | **20.** (2) |
| **21.** (4) | **22.** (2) | **23.** (2) | **24.** (3) |
| **25.** (3) | **26.** (3) | **27.** (4) | **28.** (3) |
| **29.** (2) | **30.** (3) | **31.** (2) | **32.** (4) |
| **33.** (4) | **34.** (4) | **35.** (4) | **36.** (4) |
| **37.** (1) | **38.** (3) | **39.** (2) | **40.** (1) |
| **41.** (2) | **42.** (4) | **43.** (2) | **44.** (3) |
| **45.** (3) | **46.** (3) | **47.** (1) | **48.** (3) |
| **49.** (3) | **50.** (3) | **51.** (3) | **52.** (4) |
| **53.** (4) | **54.** (1) | **55.** (3) | **56.** (3) |
| **57.** (3) | **58.** (1) | **59.** (4) | **60.** (1) |
| **61.** (1) | **62.** (2) | **63.** (1) | **64.** (2) |
| **65.** (1) | **66.** (2) | **67.** (3) | **68.** (2) |
| **69.** (2) | **70.** (2) | **71.** (4) | **72.** (2) |
| **73.** (3) | **74.** (1) | **75.** (2) | **76.** (3) |
| **77.** (1) | **78.** (1) | **79.** (4) | **80.** (4) |
| **81.** (1) | **82.** (4) | **83.** (2) | **84.** (1) |
| **85.** (3) | **86.** (3) | **87.** (2) | **88.** (3) |
| **89.** (3) | **90.** (4) | **91.** (1) | **92.** (1) |
| **93.** (4) | **94.** (2) | **95.** (4) | **96.** (2) |
| **97.** (1) | **98.** (3) | **99.** (3) | **100.** (4) |

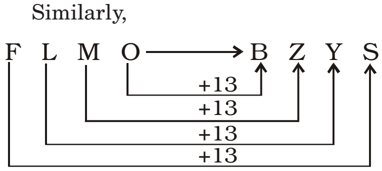
## EXPLANATIONS

**1.** (2) Barometer is a scientific instrument used for measuring atmospheric pressure. Similarly, Odometer is a scientific instrument used for measuring the distance travelled by avehicle.

**2.** (1)




Similarly,




**3.** (2) $243 \Rightarrow 24 - 3 = 21$
$508 \Rightarrow 50 - 8 = 42$
And, $21 \times 2 = 42$
Similarly,
$163 \Rightarrow 16 - 3 = 13$
$326 \Rightarrow 32 - 6 = 26$
And, $13 \times 2 = 26$

**4.** (4) Except Root, all other are visible parts of a plant or tree.

**5.** (3)

$C \xrightarrow{+2} E \xrightarrow{-4} A \xrightarrow{+2} C$

$F \xrightarrow{+2} H \xrightarrow{-4} D \xrightarrow{+2} F$

$T \xrightarrow{+2} V \xrightarrow{-4} R \xrightarrow{+2} T$

But,

$P \xrightarrow{+2} R \xrightarrow{-5} M \xrightarrow{+3} P$

**6.** (1) Except the number-pair '2132 – 161', in all other number-pairs the product of all the four digits of the first number is equal to the second number.
2678 – 672
$\Rightarrow 2 \times 6 \times 7 \times 8 = 672$
4325 – 120
$\Rightarrow 4 \times 3 \times 2 \times 5 = 120$
6931 – 162
$\Rightarrow 6 \times 9 \times 3 \times 1 = 162$
But,
2132 – 161
$\Rightarrow 2 \times 1 \times 3 \times 2 = 12$

**7.** (2) Arrangement of words as per order in the dictionary :
4. Dilled
↓
2. Dillydallied
↓
5. Dillydallies
↓
3. Dillydally
↓
1. Dillydallying

**8.** (2)

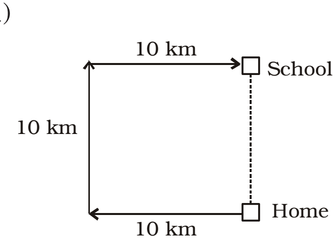
*l m* [n] o [o] *n m* [*l*] /

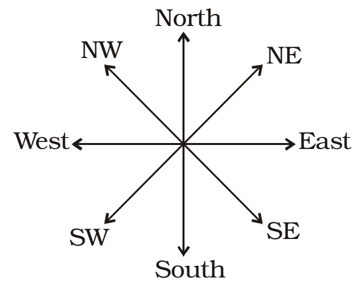
*l* [m] *n* [o] [o] *n m l*

**9.** (1) $21 + (2)^2 = 25$
$25 + (3)^3 = 52$
$52 + (4)^2 = 68$
$68 + (5)^3 = 193$

$193 + (6)^2 =$ [229]

**10.** (1)




It is clear from the diagram that school is 10km North from his home.

**11.** (2)
P > Q
S > T > P
R does not have the least marks.

S > T > P > Q
↑________|
R

Clearly, Q will have the least marks.

**12.** (1) There is no 'D' letter in the given word. Therefore, the word PROCEED cannot be formed.

R E C I P [R] O [C A] T [E]
⇒ RACE

[R E] C I [P] RO C [A T E]
⇒ REPEAT

R E C I P [R] O C [A T E] ⇒ TEAR

**13.** (4)

| C | A | S | I | O |
|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ |
| 3 | 1 | 19 | 9 | 15 |

Position number in the English alphabetical series.
Therefore,

| C | I | T | I | Z | E | N |
|---|---|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 3 | 9 | 20 | 9 | 26 | 5 | 14 |

**14.** (1) $6 \div 17 \times 51 + 6 - 12 = -4$
$\Rightarrow 6 \times 17 \div 51 + 6 - 12 = -4$

$\Rightarrow 6 \times \frac{17}{51} + 6 - 12 = -4$

$\Rightarrow 2 + 6 - 12 = -4$
$\Rightarrow 8 - 12 = -4$

**15.** (3) $6 * 9 - 4 = 58$
$\Rightarrow 6 \times 9 + 4 = 58$
[ $* \Rightarrow \times$ and $- \Rightarrow +$]
$3 * 9 - 7 = 34$
$\Rightarrow 3 \times 9 + 7 = 34$

Therefore,

$A * 4 - 9 = 91$

$\Rightarrow A \times 4 + 9 = 91$

$\Rightarrow A \times 4 = 91 - 9 = 82$

$\Rightarrow A = \frac{82}{4} = 20.5$

**16.** (1) First Figure

$5 + 6 + 7 + 9 = 9 \times 3$

$\Rightarrow 27 = 27$

Second Figure

$8 + 9 + 7 + 6 = 6 \times 5$

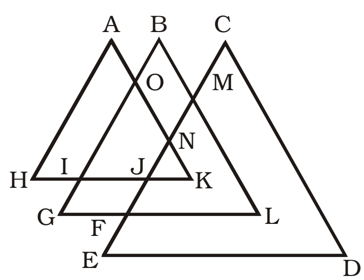
$\Rightarrow 30 = 30$

Third Figure

$? + 3 + 6 + 5 = 6 \times 3$

$\Rightarrow ? = 18 - 14 = \boxed{4}$

**17.** (3)




The triangles are :

$\Delta$AHK; $\Delta$OIK; $\Delta$NJK;

$\Delta$BGL; $\Delta$MFL; $\Delta$CED;

Thus, there are six triangles in the given figure.

**18.** (1) First Premise is Particular Affirmative (I–type).

Second Premise is Universal Affirmative (A–type).

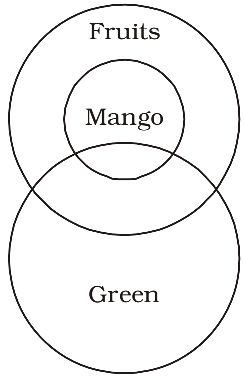
Some staplers are pins.

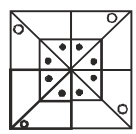
All pins are markers.

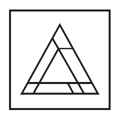
I + A $\Rightarrow$ I –type of Conclusion "Some staplers are markers". This is the Conclusion I.

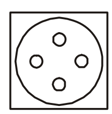
**19.** (1) From the two views of the same cube, it is clear that '1' lies opposite '4'.

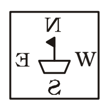
**20.** (2) All mangoes are fruits. Some mangoes and some other fruits and things may be green.




**21.** (4) 

**22.** (2) 

**23.** (2) 

**24.** (3) 

**25.** (3) G Þ 00, 14, 23, 32, 41

U Þ 56, 68, 75, 87, 99

I Þ 57, 69, 76, 88, 95

D Þ 59, 66, 78, 85, 97

E Þ 04, 13, 22, 31, 40

| Option | G | U | I | D | E |
|---|---|---|---|---|---|
| (1) | 00 | 68 | 95 | ~~58~~ | 04 |
| (2) | 14 | 75 | 88 | ~~87~~ | 40 |
| (3) | 23 | 99 | 76 | 78 | 31 |
| (4) | 41 | 87 | 57 | 66 | ~~12~~ |

**26.** (3) An oligopolymarket structure characterized by a small number of large firms that dominate the market, selling either identical or differentiated products, with significant barriers to entry into the industry. This is one of four basic market structures. Oligopolies can result from various forms of collusion which reduce competition and lead to higher prices for consumers.

**27.** (4) Monetary policy refers to the credit control measures adopted by the central bank of a country (RBI in India). The instruments of monetary policy are of two types: quantitative and qualitative. They affect the level of aggregate demand through the supply of money, cost of money and availability of credit. Of the two types of instruments, the first category includes bank rate variations, open market operations and changing reserve requirements. Public debt and public revenue comes under Fiscal policy and not Monetary policy.

**28.** (3) Though the President of India is a constituent part of Parliament, he does not sit or participate in the discussions in either of the two Houses. He does not belong to any of the two houses. He is elected by an electoral college consisting of the elected members of both Houses of Parliament and the elected members of the Legislative Assemblies of the States.

**29.** (2) Article 352 deals with the proclamation of emergency in India. It deals with the imposition of National emergency in Indiaon the basis of external aggression or armed rebellion in the whole of India or a part of its territory. Such an emergency was declared in India in 1962 (China war), 1971 (Pakistan war), and 1975 (declared by Indira Gandhi).

**30.** (3) The Bardoli Satyagraha of 1928 was a no-tax movement that was led by Sardar Vallabhbhai Patel. It was a major episode of civil disobedience and revolt in the Indian Independence Movement. it was during the Bardoli Satyagraha that Patel received the title of Sardar.

**31.** (2) Bal Gangadhar Tilak (Lokmanya Tilak) was called the ' father of Indian Unrest' by Valentine Chirol. He was one of the first and strongest advocates of "Swaraj" (self-rule) and a strong radical in Indian consciousness. He roused the nation's consciousness for complete independence.

**32.** (4) Tropical evergreen forests are found in the western slopes of the Western Ghats in Kerala and Karnataka. The Western Ghats is one of the eight "hottest hot-spots" of biological diversity in the world. Tropical evergreen forests are also found in hills of Jaintia and Khasi. Some of the important tress of tropical evergreen forest are rosewood, mahogany and ebony.

**33.** (4) Magnetosphere is the region above the Earth's surface in which charged particles are affected by the Earth's magnetic field. The exosphere is now considered as part of the magnetosphere. The outer boundary of the magnetosphere or the final boundary between the Earth and outer space is known its magnetopause.

**34.** (4) Thymosin is the hormone of the thymus. It stimulates the development of disease-fighting T cells. Throughout our childhood years, white blood cells called lymphocytes pass through the thymus, where they are transformed into T cells. Once T cells have fully matured in the thymus, they migrate to the lymph nodes throughout the body, where they aid the immune system in fighting disease.

**35.** (4) Photosynthesis takes place in the chloroplasts that have chlorophyll present in them. It is the chlorophyll that absorbs light energy from the sun. Photosynthesis occurs when green plants use the energy of light to convert carbon dioxide ($CO_2$) and water ($H_2O$) into carbohydrates.

**36.** (4) Blood group AB+ individuals have both A and B antigens on the surface of their RBCs, and their blood plasma does not contain any antibodies against either A or B antigen. Therefore, an individual with type AB blood can receive blood from any group (with AB being preferable), but cannot donate blood to any group other than AB. They are known as universal recipients.

**37.** (1) A concave mirror can form diminished as well as enlarged images, depending upon the distance of the object from the mirror. The image can be real and inverted or virtual and erect. While a convex mirror always forms a virtual, erect and diminished image, irrespective of the distance of the object from the mirror.

**38.** (3) Soap bubbles are spherical-because of an attractive force called surface tension that pulls molecules of water into the tightest possible groupings. The tightest possible grouping that any collection of particles can achieve is to pack together into a sphere. Of all possible shapes — cubes, pyramids, irregular chunks — a sphere has the smallest amount of outside area.

**39.** (2) CAD stands for Computer-Aided Design. It is the use of computer systems to aid in the creation, modification, analysis, or optimization of a design.CAD software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing.

**40.** (1) An exothermic reaction is a chemical or physical reaction that releases heat. It gives net energy to its surroundings. Expressed in a chemical equation: reactants ? products + energy. It is the opposite of an endothermic reaction.

**41.** (2) Sodium chloride, also known as salt or halite, is an ionic compound with the chemical formula NaCl, representing a 1:1 ratio of sodium and chloride ions. Sodium chloride is the salt most responsible for the salinity of seawater. In its edible form of table salt, it is commonly used as a condiment and food preservative.

**42.** (4) The overall contribution of greenhouse gases to global warming depends on their atmospheric lifetime as well as their ability to trap radiation. Each ton of Chlorofluorocarbon emissions is about 5,750 times more efficient at trapping heat than each ton of $CO_2$. The comparatively greater amount of $CO_2$ in the atmosphere, however, means that it accounts for roughly half of the radiative forcing associated with the greenhouse effect. So, it contributes the maximum to the phenomena of global warming.

**43.** (2) Under MGNREGA, a Social Audit Committee will be constituted to facilitate the proceedings of Social Audit by the Gram Sabha and undertake activities for the preparatory phase. Gram Sabha may elect the composition of the Social Audit Committee, but the Committee will necessarily consist of atleast 9 members including Vigilance & Monitoring Committee, 6 workers who have worked in current/previous works under NREGA of the same Gram

Panchayat, members of disadvantaged groups and not less than one third members of Social Audit Committee shall be women. The Social Audit Committee will not include the ruling Sarpanch or any members of the current Panchayat.

**44.** (3) The safety lamp was invented by Sir Humphry Davy in 1815. It consists of a wick lamp with the flame enclosed inside a mesh screen. It was created for use in coal mines, to reduce the danger of explosions due to the presence of methane and other flammable gases.

**45.** (3) Stan Wawrinka of Switzerland, in September 2016, won the 2016 US Open men's singles title. In the final match, he defeated Novak Djokovic (World number One) from Serbia by 6-7, 6-4, 7-5 and 6-3 score. This was Wawrinka's maiden US Open andthird major title.

**46.** (3) Radha Reddy: along with her husband Raja Reddy, she forms a Kuchipudi dancing couple, regarded solely responsible for bringing it on the cultural map of the world; Padma Subrahmanyam: is an Indian classical Bharatanatyam dancer; Sitara Devi: was an eminent Indian dancer of the classical Kathak style of dancing.

**47.** (1) The Nobel Peace Prize for 2016 was, in October 2016, awarded to Colombian President Juan Manuel Santos for his efforts to end his country's 50-year civil war.Santos negotiated a peace agreement with the Revolutionary Armed Forces of Colombia (FARC) guerrilla group but the peace deal was rejected by a narrow majority of Colombians when it was put to referendum.

**48.** (3) *An Era of Darkness: The British Empire in India* has been authored by Congress leader Shashi Tharoor. His other books include the pathbreaking satire The Great Indian Novel (1989), the classic India: From Midnight to the Millennium (1997), and most recently, India Shastra: Reflections on the Nation in Our Time (2015).

**49.** (3) India, in January 2017, signed 14 agreements with the United Arab Emirates, including a deal allowing the Gulf nation to fill the country's strategic storage facility in southern India.India and UAE also decided to elevate the bilateral relationship to a Comprehensive Strategic Partnership.

**50.** (3) Bhutan is also called Druk Yul by its people. It is known as the "Land of the Thunder Dragon". The Druk is the "Thunder Dragon" of Tibetan and Bhutanese mythology and a Bhutanese national symbol. A druk appears on the flag of Bhutan, holding jewels to represent wealth. In Dzongkha, Bhutan is called Druk Yul "Land of Druk", and Bhutanese leaders are called Druk Gyalpo, "Thunder Dragon Kings".

**51.** (3) 3) 200 (66
18
20
18
2

$\therefore$ Number of numbers divisible by 3 = 66

Again,

21) 200 (9
189
11

$\therefore$ Number of numbers divisible by 3 and 7 = 9

$\therefore$ Required answer = 66 – 9 = 57

**52.** (4) According to the question,

$10 \times 6$ women $\equiv 6 \times 5$ men $\equiv 8 \times 10$ children

$\Rightarrow$ 6 women $\equiv$ 3 men $\equiv$ 8 children

$\therefore$ Ratio of the efficiency of one woman, one man and one child $= \frac{1}{6} : \frac{1}{3} : \frac{1}{8}$

$= \frac{1}{6} \times 24 : \frac{1}{3} \times 24 : \frac{1}{8} \times 24$

[ LCM of 6,3 and 8 = 24]

= 4 : 8 : 3

**53.** (4) $\frac{V_1}{V_2} = \frac{\pi r_1^2 h_1}{\pi r_2^2 h_2}$

$\Rightarrow \frac{7}{3} = \frac{\pi r_1^2 \times 7}{154 \times 9} = \frac{22 \times r_1^2 \times 7}{7 \times 154 \times 9}$

$\Rightarrow \frac{7}{3} = \frac{r_1^2}{7 \times 9}$

$\Rightarrow r_1^2 = 7 \times 7 \times 3$

$\therefore r_1 = \sqrt{7 \times 7 \times 3} = 7\sqrt{3}$ cm.

**54.** (1) Let the marked price of article be Rs. 100.

$\therefore$ C.P. for Kanchan = Rs. 75

Its S.P. = Rs.$\left(\frac{75 \times 175}{100}\right)$

= Rs. 131.25

$\therefore$ Marked price = Rs. 100

$\therefore$ Required profit per cent

= (131.25 –100)%

= 31.25%

**55.** (3) A : B : C = 6 : 8 : 7

Sum of the terms of ratio

= 6 + 8 + 7 = 21

$\therefore$ A's share = Rs. $\left(\frac{6}{21} \times 8400\right)$

= Rs. 2400

B's share = Rs. $\left(\frac{8}{21} \times 8400\right)$

= Rs. 3200

C's share = Rs. $\left(\frac{7}{21} \times 8400\right)$

= Rs. 2800

Ratio of the saving of A, B and C = 3 : 2 : 4

∴ B's saving = Rs. 400

∴ A's saving = $\frac{3}{2} \times 400$

= Rs. 600

C's saving = Rs. 800

∴ Ratio of the expenditures of A, B and C

= (2400– 600) : (3200 – 400): (2800 – 800)

= 1800 : 2800 : 2000

= 9 : 14 : 10

**56.** (3) Difference = 8 – 14 = – 6 years

∴ Required average

$= \left(12 - \frac{6}{24}\right)$ years

= (12 – 0.25) years

= 11.75 years

**57.** (3) C.P. of article = Rs. 100 and its S.P. = Rs. $x$

According to the question,

$70 = \frac{40}{100} \times x$

$\Rightarrow x = \frac{70 \times 100}{40}$ = Rs. 175

∴ Profit per cent = 75%

**58.** (1) According to the question,

a% of b + b% of $a$

$= \frac{ab}{100} + \frac{ab}{100} = \frac{2ab}{100}$

= 2a% of b

**59.** (4) According to the question,

$\left(1 - \frac{6}{7}\right) \times$ Usual time = 15 minutes

$\Rightarrow \frac{1}{7} \times$ Usual time = 15 minutes

⇒ Usual time = (15 × 7) minutes

= 105 minutes

**60.** (1)

$$\text{S.I.} = \frac{\text{Principal} \times \text{Time} \times \text{Rate}}{100}$$

According to the question,

$$\frac{10000 \times 3 \times R}{100} + \frac{6000 \times 4 \times R}{100}$$

= 5400

⇒ 300R + 240R = 5400

⇒ 540R = 5400

$\Rightarrow R = \frac{5400}{540}$ = 10% per annum

**61.** (1) If polynomial P($x$) is exactly divisible by ($x$+1), then P(–1) = 0

∴ $P(x) = x^3 + 2x^2 - 5x + k$

⇒ P(–1) = 0

$\Rightarrow (-1)^3 + 2(-1)^2 - 5(-1) + k = 0$

⇒ –1 + 2 + 5 + k = 0

⇒ $k$ + 6 = 0

⇒ $k$ = – 6

**62.** (2) $3x + \frac{1}{5x} = 7$

$\Rightarrow 15x^2 + 1 = 35x$ ...........(i)

$\therefore \frac{5x}{15x^2 + 15x + 1} = \frac{5x}{15x^2 + 1 + 15x}$

$= \frac{5x}{35x + 15x}$

[ From equation (i)]

$= \frac{5x}{50x} = \frac{1}{10}$

**63.** (1) It is given, $x + \frac{1}{4x} = \frac{5}{2}$

$\Rightarrow 2x + \frac{1}{2x} = 5$

On cubing both sides,

$\left(2x + \frac{1}{2x}\right)^3 = 5^3$

$\Rightarrow 8x^3 + \frac{1}{8x^3} + 3 \times 2x \times \frac{1}{2x}\left(2x + \frac{1}{2x}\right) = 125$

$\Rightarrow 8x^3 + \frac{1}{8x^3} + 3 \times 5 = 125$

$\Rightarrow 8x^3 + \frac{1}{8x^3} = 125 - 15$

= 110

$\Rightarrow \frac{64x^6 + 1}{8x^3} = 110$

**64.** (2) $x^2 + x = 19$

$\Rightarrow x^2 + 2 \times x \times 5 + 5^2 - 9x = 19 + 5^2$

$\Rightarrow (x + 5)^2 - 9x = 44$

$\Rightarrow (x + 5)^2 - 9(x + 5) = 44 - 45$

$\Rightarrow (x + 5)^2 - 9(x + 5) = -1$

$\Rightarrow (x + 5) - 9 = \frac{-1}{x + 5}$

$\Rightarrow (x + 5) + \frac{1}{x + 5} = 9$

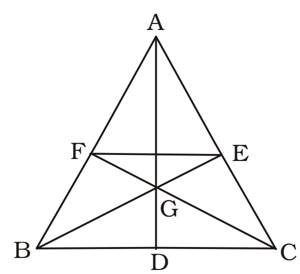
On squaring both sides,

$(x + 5)^2 + \frac{1}{(x + 5)^2} + 2 = 81$

$\Rightarrow (x + 5)^2 + \frac{1}{(x + 5)^2} = 81 - 2$

= 79

**65.** (1)




$\Delta AFG = \Delta AGE = \frac{1}{6}\ \Delta ABC$

FE | | BC and FE = $\frac{1}{2}$ BC

$\therefore \frac{\Delta AFE}{\Delta ABC} = \frac{EF^2}{BC^2} = \frac{1}{4}$

$\Delta AFE = \frac{1}{4}\ \Delta ABC$

∴ Area of ΔFGE= ΔAFG + ΔAGE –ΔAFE

$= \frac{1}{6}\ \Delta ABC + \frac{1}{6}\ \Delta ABC - \frac{1}{4}\ \Delta ABC$

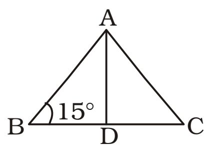
$= \left(\frac{1}{6} + \frac{1}{6} - \frac{1}{4}\right)\Delta ABC$

$= \left(\frac{2 + 2 - 3}{12}\right)\Delta ABC$

$= \frac{1}{12} \times \Delta ABC$

$= \frac{1}{12} \times 156 = 13$ sq.cm.

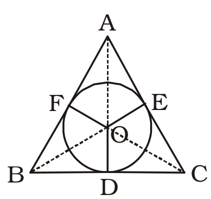
**66.** (2)




In $\Delta ABD$;
$AD = BD$
$\therefore \angle BAD = \angle ABD = 15°$
$\therefore \angle ADB = 180° - 2 \times 15°$
$= 180° - 30° = 150°$
$\therefore \angle ADC = 180° - 150° = 30°$

**67.** (3) Side of square $= \frac{9\sqrt{2}}{\sqrt{2}}$

$= 9$ cm.
$\therefore$ Perimeter of squar
= Primeter of triangle
$= 4 \times 9 = 36$ cm.




It will be an equilateral triangle. OE = OD = OF = r cm.

Area of $\Delta ABC = \frac{\sqrt{3}}{4} \times 12 \times 12$

$= 36\sqrt{3}$ sq.cm.

$\therefore \Delta OAB + \Delta OBC + \Delta OAC = \Delta ABC$

$\Rightarrow \frac{1}{2} r\,(AB + BC + CA) = 36\sqrt{3}$

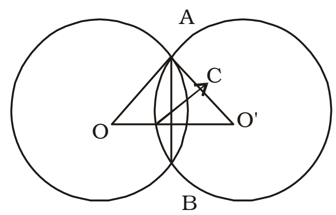
$\Rightarrow \frac{1}{2} r \times 36 = 36\sqrt{3}$

$\Rightarrow r = 2\sqrt{3}$ cm.

$\therefore$ Area of circle $= \pi r^2$

$= \pi\,(2\sqrt{3})^2 = 12\pi$ sq.cm.

**68.** (2)




AB = 12 cm.
AC = CB = 6 cm.
$OA^2 = AC^2 + OC^2$
In $\Delta OAC$,

$\left(\frac{15}{2}\right)^2 = 6^2 + OC^2$

$\Rightarrow OC^2 = \left(\frac{15}{2}\right)^2 - 6^2$

$\Rightarrow OC = \sqrt{\frac{225}{4} - 36}$

$= \sqrt{\frac{225 - 144}{4}} = \sqrt{\frac{81}{4}} = \frac{9}{2}$

$= 4.5$ cm.
In $\Delta O'CA$,
$O'A^2 = AC^2 + CO'^2$

$\Rightarrow \left(\frac{13}{2}\right)^2 = 6^2 + CO'^2$

$\Rightarrow CO'^2 = \frac{169}{4} - 36$

$= \frac{169 - 144}{4}$

$\Rightarrow CO'^2 = \frac{25}{4} \Rightarrow CO' = \sqrt{\frac{25}{4}}$

$= \frac{5}{2} = 2.5$ cm.

$\therefore OO' = (4.5 + 2.5)$ cm. $= 7$ cm.

**69.** (2) Expression $= \sec^4\theta - \sec^2\theta.\tan^2\theta$
$= \sec^2\theta\,(\sec^2\theta - \tan^2\theta)$
$= \sec^2\theta.1 = \sec^2\theta$

**70.** (2) (sinA – cosecA) (secA– cosA) (tanA + cotA)

$= \left(\sin A - \frac{1}{\sin A}\right)$

$\left(\frac{1}{\cos A} - \cos A\right)$

$\left(\frac{\sin A}{\cos A} + \frac{\cos A}{\sin A}\right)$

$= \frac{(\sin^2 A - 1)}{\sin A} \times \frac{1 - \cos^2 A}{\cos A}$

$\times \frac{\sin^2 A + \cos^2 A}{\cos A.\sin A}$.

$= \frac{-\cos^2 A.\sin^2 A}{\sin^2 A.\cos^2 A} = -1$

**71.** (4) $\frac{1}{\cos\theta} - \frac{1}{\cot\theta} = \frac{1}{p}$

$\Rightarrow \sec\theta - \tan\theta = \frac{1}{p}$ ..........(i)

$\therefore \sec^2\theta - \tan^2\theta = 1$
$\Rightarrow (\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 1$
$\Rightarrow \sec\theta + \tan\theta = p$ .........(ii)
On adding equations (i) and (ii),

$2\sec\theta = p + \frac{1}{p}$

$\Rightarrow 2\sec\theta = \frac{p^2 + 1}{p}$

$\Rightarrow \sec\theta = \frac{p^2 + 1}{2p}$

$\Rightarrow \cos\theta = \frac{2p}{p^2 + 1}$

**72.** (2) Required total surplus
= [(1671–1641)+ (1103 –1002)] thousand quintals
= (30 + 101) thousand quintals = 131 thousand quintals

**73.** (3) Total surplus of country C
= [(2035– 2247) + (1821 – 2018) + (1937 – 2563) + (3014 –2988)] thousand quintals
= (– 212 – 197 – 626 + 26) thousand quintals
= – 1009 thousand quintals
$\therefore$ Required stock = (7835 – 1009) thousand quintals
= 6826 thousand quintals

**74.** (1) Average production of country C

$= \frac{2035+1821+1937+3014}{4}$

$= \frac{8807}{4}$ thousand quintals

Average sale

$= \frac{2247+2018+2563+2988}{4}$

$= \frac{9816}{4}$ thousand quintals

Required difference

$= \frac{1}{4}(8807–9816)$ thousand quintals

$= \frac{-1009}{4}$ thousand quintals

= –252.25 thousand quintals

**75.** (2) Total surplus of country B
= (1881 – 1798) + (2067 – 2389)
+ (1328 – 2063) + (1578 –1239)
= 83 – 322 – 735 + 339
= – 635 thousand quintals
Total surplus of country D
= (3126 – 2417) + (2987 – 2911)
+ (2143 – 3188) + (4126 – 3563)
= 709 + 76 – 1045 + 563
= 1348 – 1045 = 303 thousand quintals

**76.** (3) Sugar is an uncountable Noun. Hence, sugar in her milk should be used here. The plural of **sugar** is not **sugars**.

**77.** (1) The use of myself (reflexive pronoun) as a subject is not proper. Hence, Roshni and I should be used here. As the Rule 231 suggests, first person will follow third person.

**78.** (1) **Until** is used as a subordinating conjunction to connect an action or an event to a point in time.

**79.** (4) **Tear down** = an act of completely dismantling something; destroy something.

**80.** (4) **Scuttle (Noun)** = a metal container with a handle, used to store coal for a domestic fire; brazier; a shallow open basket for carrying something.

**Look at the sentence :**
Half a scuttle of coal 2–3 times per day is required to keep the fire burning.

**81.** (1) **Loquacious (Adjective)** = talkative; garrulous; tending to talk a great deal.

**Look at the sentence :**
He was loquacious, providing a great deal of his introspection in public.

**82.** (4) **Obfuscate (Verb)** = make obscure, unclear; confuse; to make something less clear and harder to understand.

**Clarify (Verb)** = make something less confused and more comprehensible; to make something clear.

**Look at the sentences :**
She was criticized for using arguments that obfuscated the main issue.
The position of all shareholders will be clarified next month when we finalize our proposals.

**83.** (2) **Triumph (Noun)** = to have a great victory or achievement; joy or satisfaction resulting from a success or victory.

**Sorrow (Noun)** = a feeling of deep distress caused by loss or other misfortune; unhappiness.

**Look at the sentences :**
I raised my arms in triumph, whooped with joy and ran round the courtyard in celebration.
The sorrows of her earlier years gave way to joy in later life.

**84.** (1) **Chicken-hearted** = easily frightened; fearful; timid; cowardly.

**Look at the sentence :**
Obviously Ritu had noticed our unexpected visitors at the river and made for home as fast as chicken - hearted legs could carry him.

**85.** (3) **Red letter day** = a special, happy and important day that you will always remember; significant day.

**Look at the sentence :**
The day I first set foot in America was a red letter day for me.

**86.** (3) As the sense suggests, Past progressive should be used here .
The phone rang while I was watching TV.

**87.** (2) In such a structure, present perfect should be used.

**90.** (4) **Propriety (Noun)** = correct moral behaviour or actions.

**Omission (Noun)** = deletion; cut; exclusion.

**Look at the sentences :**
She was careful always to behave with propriety.
There are some serious errors and omissions in this book.

**91.** (1) **Acquaintance (Noun)** = familiarity; a person that you have met but do not know well.

**Appeasement (Noun)** = to give an advantage; the action of satisfying the demands.

**Accentuate (Verb)** = call attention to; to emphasize; underline.

**Look at the sentences :**
She claimed that the government had only changed the law for the appeasement of this community.
Her dress was tightly belted, accentuating the slimness of her waist.

**94.** (2) Somebody told me ⇒ I was told by somebody.

**95.** (4) Where shall I be ....... ⇒ where he would be that time the following month.
Rohan said ⇒ Rohan wondered.

**98.** (3) **Subjective** = personalized.

**99.** (3) **Tangible (Adjective)** = real and not imaginary.

❑❑❑

SET **13**

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 10.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word pair from the given alternatives :
Fire : Burn : : ? : ?
(1) Water : Drink
(2) Wood : Trees
(3) Ice : Freeze
(4) Flower : Rose

**2.** In the following question, select the related letters from the given alternatives :
KLMN : IJKL : : TUVW : ?
(1) RSUT (2) VWXY
(3) STUV (4) RSTU

**3.** In the following question, select the related number from the given alternatives :
3 : 27 : : 4 : ?
(1) 63 (2) 64
(3) 65 (4) 15

**4.** In the following question, select the odd word from the given alternatives :
(1) Ludo (2) Chess
(3) Polo (4) Carrom

**5.** In the following question, select the odd letters from the given alternatives :
(1) DGJ (2) KNQ
(3) RUX (4) ILN

**6.** In the following question, select the odd number from the given alternatives :
(1) 31 (2) 37
(3) 43 (4) 49

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Storm
2. Strap
3. Strangle
4. Stamped
5. Satire
(1) 51432 (2) 51342
(3) 54132 (4) 53412

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series :
BT, DR, FP, ?
(1) HO (2) HN
(3) NH (4) OH

**9.** In the following question, select the missing number from the given series :
3, 8, 5, 27, 8, 64, 12, 125, 17, ?
(1) 216 (2) 361
(3) 625 (4) 441

**10.** The ratio of present ages of P and Q is 5 : 8. Three years later their ages will be in ratio 8 : 11. What is the present age (in years) of Q?
(1) 5 (2) 11
(3) 14 (4) 8

**11.** Pointing to a lady, Diwakar said, "Her mother's only grandson is my son." How is that lady related to Diwakar?
(1) Aunty (2) Sister
(3) Mother (4) Wife

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
BIOLOGICAL
(1) LOGIC (2) GLOBE
(3) BAIL
(4) BILL

**13.** In a certain code language, "who are you" is written as "432", "they is you" is written as "485" and "they are dangerous" is written as "295". How is "dangerous" written in that code language?
(1) 2 (2) 4
(3) 5 (4) 9

**14.** If "P" denotes "multiplied by", "R" denotes "subtracted from", "S" denotes "added to" and "Q" denotes "divided by", then which of the following equation is true?
(1) 18 R 60 Q 15 S 2 = 8
(2) 15 S 16 Q 2 P 4 = 47
(3) 3 P 5 R 18 Q 3 = 6
(4) 15 S 28 Q 4 P 2 = 27

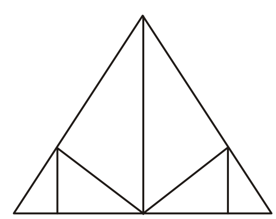
**15.** If 4 * 7 * 2 = 361 and 5 * 9 * 1 = 480, then 2 * 1 * 3 = ?
2 * 1 * 3 = ?
(1) 312 (2) 324
(3) 210 (4) 102

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

| 3 | 10 | 6 | 186 |
|---|---|---|---|
| 9 | 5 | 3 | 138 |
| 5 | 7 | 1 | 36 |
| 3 | 2 | 5 | ? |

(1) 35 (2) 42
(3) 45 (4) 95

**17.** How many triangles are there in the given figure ?



(1) 10 (2) 11
(3) 12 (4) 13

**18.** In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance

from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements.

**Statements :**

All cups are vegetables.

All vegetables are pens.

**Conclusions :**

I. Some pens are vegetables.

II. Some pens are cups.

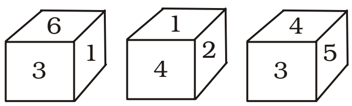
(1) Only conclusion (I) follows.

(2) Only conclusion (II) follows.

(3) Both conclusions follow.

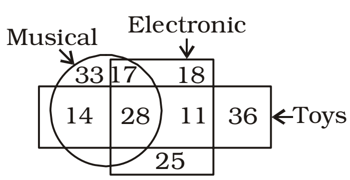
(4) Neither conclusion (I) nor conclusion (II) follows.

**19.** Three positions of a cube are shown below. What will come opposite to face containing '5' ?




(1) 6 (2) 1
(3) 3 (4) 2

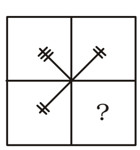
**20.** In the given figure, how many are musical toys ?



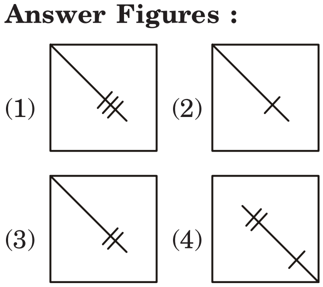

(1) 53 (2) 61
(3) 42 (4) 45

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

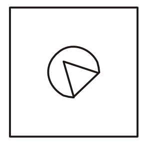



**Answer Figures :**

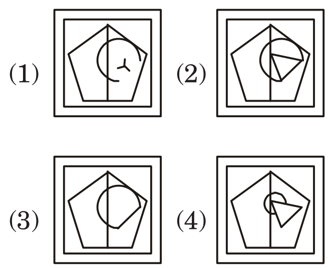



**22.** From the given answer figures, select the one in which the question figure is hidden/ embedded.

**Question Figure :**

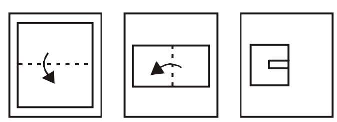


**Answer Figures :**

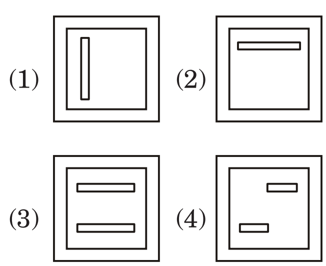



**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened ?

**Question Figures :**

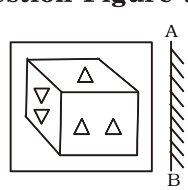


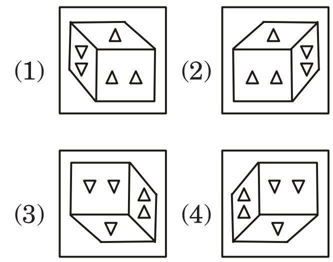
**Answer Figures :**




**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure ?

**Question Figure :**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'S' can be represented by 21, 43, etc., and 'O' can be represented by 65, 88, etc. Similarly, you have to identify the set for the word "SPEAK".

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | I | C | E | P | S |
| 1 | S | E | P | I | C |
| 2 | E | S | I | C | P |
| 3 | C | P | S | E | I |
| 4 | P | I | C | S | E |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | R | O | A | K | B |
| 6 | O | A | K | B | R |
| 7 | A | K | B | R | O |
| 8 | K | B | R | O | A |
| 9 | B | R | O | A | K |

(1) 10, 12, 11, 66, 58
(2) 43, 31, 33, 89, 86
(3) 21, 40, 44, 56, 99
(4) 32, 03, 20, 97, 66

## GENERAL AWARENESS

**26.** Which one of the following is not an instrument of credit control in India?
(1) Rationing of credit
(2) Direct Action
(3) Open Market operations
(4) Variable cost reserve ratios

**27.** Which among the following is an example of micro-economic variable?
(1) National Income
(2) Aggregate Supply
(3) Employment
(4) Consumer's Equilibrium

**28.** Fundamental duties are mentioned in which of the following part of Indian Constitution?
(1) Part II (2) Part III
(3) Part V (4) Part IV A

**29.** What is the minimum age for becoming a Governor of state in India?
(1) 30 years (2) 25 years
(3) 35 years (4) 45 years

**30.** Who amongst the following was the successor of Sikh Guru Har Krishan?
(1) Guru Angad Dev
(2) Guru Tegh Bahadur
(3) Guru Hargobind
(4) Guru Amar Das

**31.** Lord Cornwallis is known for ____.
(1) permanent revenue settlement of Bengal
(2) attacking the caste system
(3) land revenue settlement of United States
(4) ryotwari settlement of Madras

**32.** 49th Parallel is the boundary line between which two countries?
(1) USA and Canada
(2) North and South Vietnam
(3) Germany and France
(4) Brazil and Chile

**33.** How does La-Nina affect the Pacific Ocean?
(1) Decreases salinity of ocean
(2) Cools downs the temperature of water
(3) Maintains stable temperature of water
(4) Increases salinity of ocean

**34.** Cinnamon is obtained from which part of the plant?
(1) Stem (2) Bark
(3) Roots (4) Fruits

**35.** Insulin is a kind of _____
(1) hormone (2) protein
(3) enzyme (4) vitamin

**36.** Which among the following carries impure blood to human heart?
(1) Aorta
(2) Pulmonary vein
(3) Pulmonary arteries
(4) Vena Cava

**37.** Why does water tank appear shallower when viewed from the top?
(1) Due to reflection
(2) Due to refraction
(3) Due to diffraction
(4) Due to total internal reflection

**38.** Which colour is formed when Red and Green are mixed?
(1) Light blue
(2) Yellow
(3) White
(4) Grey

**39.** What is the full form of JPEG?
(1) Joint Photographic Experts Group
(2) Joint Protocol Experts Graphics.
(3) Joint Programming Experts Graphics
(4) Joint Project Experts Group

**40.** What is an endothermic reaction?
(1) Reaction in which heat is released.
(2) Reaction in which heat is absorbed.
(3) Reaction in which neither heat is released nor absorbed.
(4) None of these

**41.** Which of the following is an ore of Aluminium?
(1) Galena (2) Cryollite
(3) Cinnabar (4) Epsom Salt

**42.** Which of the following gas was released during Bhopal gas tragedy?
(1) Methyl isocyanate
(2) Sodium isothiocyanate
(3) Nitrogen isothiocyanate
(4) Potassium isothiocyanate

**43.** What is the name of the scheme for the Employees State Insurance Corporation (ESIC) beneficiaries launched in Delhi region?
(1) Sakushal Humesha
(2) Kahin bhi kabhi bhi
(3) Jeevan Arogya
(4) Shramik Kalyan

**44.** Match the following.

| | **Scientist** | | **Discovery** |
|---|---|---|---|
| 1. | Joseph Thomson | a. | Optical Fiber |
| 2. | Alexander Fleming | b. | Radium |
| 3. | Narinder Kapany | c. | Electron |
| 4. | Marie Curie | d. | Penicillin |

(1) 1-c, 2-d, 3-a, 4-b
(2) 1-a, 2-d, 3-c, 4-b
(3) 1-c, 2-a, 3-d, 4-b
(4) 1-a, 2-d, 3-b, 4-c

**45.** Term 'Gambit' is associated with which of the following sport?
(1) Basketball (2) Chess
(3) Boxing (4) Golf

**46.** Madhuri Dixit is associated with which Indian Dance form?
(1) Bharatnatyam
(2) Kuchipudi
(3) Kathak
(4) Kathakali

**47.** Who among the following is a Sanjay Chopra Award recipient for 2016?
(1) Abhinash Mishra
(2) Arjun Singh
(3) Aromal SM
(4) Srawanand Saha

**48.** 'My Story' is an autobiography of which famous cricketer?
(1) Kumar Sangakara
(2) Kevin Peterson
(3) Brendon Mccullum
(4) Michael Clarke

**49.** Which country has approved more than 500 new settler homes in East Jerusalem?
(1) USA (2) UAE
(3) Israel
(4) United Kingdom

**50.** Which of the following country is not a member of SAARC?
(1) Nepal (2) Maldives
(3) China
(4) Afghanistan

## QUANTITATIVE APTITUDE

**51.** By which least number should 5000 be divided so that it becomes a perfect square?
(1) 2 (2) 5
(3) 10 (4) 25

**52.** A can do a work in 8 days, B can do the same work in 10 days and C can do the same work in 12 days. If all three of them do the same work together and they are paid Rs. 7400, what is the share (in Rs.) of B?
(1) 2600 (2) 3000
(3) 2400 (4) 2000

**53.** If the radius of a cylinder is increased by 25%, by how much per cent the height must be reduced, so that the volume of the cylinder remains the same.
(1) 36 (2) 56
(3) 64 (4) 46

**54.** The marked price of an article is 20% more than its cost price. If 5% discount is given on the marked price, what is the profit per cent ?
(1) 5 (2) 14
(3) 15 (4) 25

**55.** If A : B = 2 : 5, B : C = 4 : 3 and C : D = 2 : 1, what is the value of A : C : D?
(1) 6 : 5 : 2
(2) 7 : 20 : 10
(3) 8 : 30 : 15
(4) 16 : 30 : 15

**56.** The average runs conceded by a bowler in 5 matches is 45 and 15.75 in other 4 matches. What is the average runs conceded by the bowler in 9 matches?
(1) 15 (2) 32
(3) 35 (4) 53.5

**57.** A person bought pens at 25 for a rupee and sold at 15 for a rupee. What is his profit per cent?
(1) $16\frac{2}{3}\%$ (2) $33\frac{1}{3}\%$
(3) $66\frac{2}{3}\%$ (4) 40%

**58.** 80 litre mixture of milk and water contains 10% milk. How much milk (in litres) must be added to make water percentage in the mixture as 80%?
(1) 8 (2) 9
(3) 10 (4) 12

**59.** A bus starts running with the initial speed of 21 km/hr and its speed increases every hour by 3 km/hr. How many hours will it take to cover a distance of 252 km?
(1) 3 (2) 5
(3) 8 (4) 10

**60.** A sum of Rs. 400 becomes Rs 448 at simple interest in 2 years. In how many years will the sum of Rs. 550 amounts to Rs. 682 at the same rate?
(1) 2 (2) 3
(3) 3.5 (4) 4

**61.** What is the value of

$$\frac{1+x}{1-x^4} \div \frac{x^2}{1+x^2} \times x(1-x)?$$

(1) $\frac{1}{x}$ (2) $x^2 - 1$
(3) $x + 1$ (4) $x$

**62.** If $x + \frac{1}{x} = 17$, what is the value of $\frac{x^4 + \frac{1}{x^2}}{x^2 - 3x + 1}$ ?

(1) $\frac{2431}{7}$ (2) $\frac{3375}{7}$
(3) $\frac{3375}{14}$ (4) $\frac{3985}{9}$

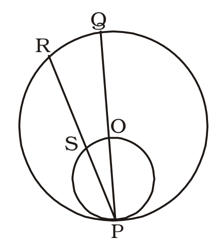
**63.** What is the value of $x$ in the equation $\sqrt{\frac{1+x}{x}} - \sqrt{\frac{x}{1+x}} = \frac{1}{\sqrt{6}}$ ?
(1) –2 (2) 3
(3) 2
(4) None of these

**64.** If $2\left[x^2 + \frac{1}{x^2}\right] - 2\left[x - \frac{1}{x}\right] - 8 = 0$, what are the two values of $\left(x - \frac{1}{x}\right)$ ?
(1) –1 or 2
(2) 1 or –2
(3) –1 or –2
(4) 1 or 2

**65.** In $\Delta ABC$, $\angle BAC = 90°$ and AD is drawn perpendicular to BC. If BD = 7 cm and CD = 28 cm, what is the length (in cm) of AD?
(1) 3.5 (2) 7
(3) 10.5 (4) 14

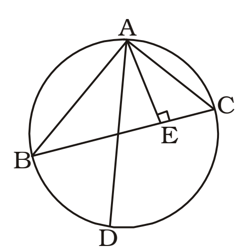
**66.** A chord of length 60 cm is at a distance of 16 cm from the centre of a circle. What is the radius (in cm) of the circle?
(1) 17 (2) 34
(3) 51 (4) 68

**67.** In the given figure, a smaller circle touches a larger circle at P and passes through its centre O. PR is a chord of length 34 cm, what is the length (in cm) of PS ?




(1) 9 (2) 17
(3) 21 (4) 25

**68.** In the given figure, ABC is a triangle in which, AB = 10 cm, AC = 6 cm and altitude AE = 4 cm. If AD is the diameter of the circum-circle, what is the length (in cm) of circum-radius ?



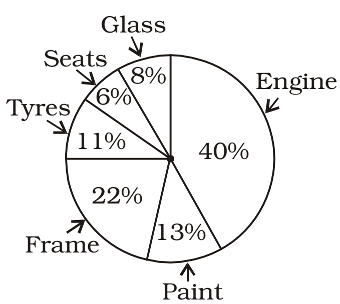

(1) 3 (2) 7.5
(3) 12 (4) 15

**69.** What is the simplified value of $\text{cosec}^6 A - \cot^6 A - 3\,\text{cosec}^2 A \cot^2 A$?
(1) –2 (2) –1
(3) 0 (4) 1

**70.** What is the simplified value of $\sqrt{\dfrac{\sec A - 1}{\sec A + 1}}$ ?
(1) cosec A – cot A
(2) sec A – tan A
(3) $\sec^2 A$
(4) sec A cosec A

**71.** If $\tan A = \dfrac{1}{2}$ and $\tan B = \dfrac{1}{3}$, then what is the value of tan (2A + B)?
(1) 1 (2) 3
(3) 5 (4) 9

**Directions (72–75) :** The pie chart given below shows the percentage of time taken by different processes in making a car.




**72.** If total time taken to make a car is 300 hours, what is the total time (in hours) taken in paint and frame?
(1) 99 (2) 72
(3) 105 (4) 66

**73.** If time taken in seats is 192 hours, what is the time taken (in hours) in glass?
(1) 256 (2) 352
(3) 416 (4) 278

**74.** If total time taken in engine and tyres is 127.5 hours, what is the difference (in hours) in time taken by frame and glass respectively?
(1) 27.5 (2) 12.5
(3) 40 (4) 35

**75.** 15% of total time is spent on quality check and this time is equally taken from all other processes. So what will be the new sectorial angle (in degrees) made by total time of seats and glass?
(1) 28.6 (2) 32.4
(3) 35.8 (4) 31.6

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** Little knowledge of playing volleyball (1)/ that she possessed proved to be (2)/helpful at the time of inaugural match. (3)/ No Error (4)

**77.** I had not completed my English homework (1)/ so I thought I was done with when the (2)/ teacher asked me to hand it in. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Keith has ______ with a failure in English examination thrice.
(1) caught (2) gone
(3) got (4) met

**79.** The manager was _____ an explanation of his conduct.
(1) called for (2) called off
(3) called to (4) called up

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Eloquent**
(1) Fluent (2) Ignorant
(3) Rude (4) Significant

**81. Nefarious**
(1) Iniquitous (2) Purposeful
(3) Suspicious
(4) Virtuous

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Ensconce**
(1) Establish
(2) Impudence
(3) Request
(4) Unveil

**83. Lugubrious**
(1) Clumsy
(2) Lucid
(3) Optimistic
(4) Sinister

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Ended in a fiasco**
(1) A complete failure
(2) A successful event
(3) Changed one completely
(4) Twisted around

**85. Sow wild oats**
(1) To make someone fool
(2) To make space to red
(3) To take revenge
(4) To waste time by doing foolish things

**Directions (86–87) :** Improve the bracketed part of the sentence.

**86.** He has painted that picture so often that he can do it with his (**eyes closed**).
(1) arms full
(2) eyes opened
(3) mind blank
(4) No improvement

**87.** If you talk to her nicely, she will probably (**allow you**) her notes.
(1) allow that you have
(2) let you have
(3) let you to have
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. Easily duped or fooled**
(1) Bigot
(2) Gullible
(3) Ridicule
(4) Venerable

**89. Atonement for one's sins**
(1) Elite
(2) Ignoramus
(3) Incendiary
(4) Repentance

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Usable
(2) Defense
(3) Inventor
(4) Annaul

**91.** (1) Changeable
(2) Inedible
(3) Tracable
(4) Valuable

**Directions (92–93) :** each question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. It would be better to speak of uniformities of nature.
Q. Law of nature are not commands but statements of facts.
R. This would do away with elementary fallacy that a law implies a law given.
S. The use of the word law in this context is rather unfortunate.
(1) QSRP (2) SQRP
(3) QSPR (4) SQPR

**93.** P. When the game of life is finally over there is no second chance to correct our errors.
Q. Time is the greater equalizer of all mankind.
R. Time offers opportunity but demands a sense of regard.
S. It has taken away the best and the worst of us without regard of either.
(1) QSRP (2) RSQP
(3) PQRS (4) RSPQ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
He saw him conducting the seminar on personality development.
(1) He was seen by me to conduct the seminar on personality development.
(2) He was seen conducting the seminar on personality development.
(3) He saw the seminar on personality development being conducted by him.
(4) He saw the seminar on personality development to be conducted by him.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
Rashmi said to me, "Where is the telephone exchange"?
(1) Rashmi asked me that where the telephone exchange was.
(2) Rashmi asked me where the telephone exchange was.
(3) Rashmi asked me where was the telephone exchange.
(4) Rashmi wanted to know where the telephone exchange was.

**Directions (96–100) :** In the following questions, the passage given with blank is to be filled in with an appropriate word(s). Select the correct alternative out of the four for each numbered blank.

Corruption is a **(96)** which has been spread in the mind of wrong people of the society, community and **(97)**. It is the mistreatment of public resources just for getting some **(98)** advantage to fulfil little wish. It is concerned with the unnecessary and wrong use of both power and **(99)** by anyone whether the government or non government organisation. It affects the growth and development of the nation in all aspects like socially, **(100)** and politically.

**96.** (1) havoc (2) poison
(3) pollutant (4) grassroot

**97.** (1) country (2) world
(3) universe (4) company

**98.** (1) fruitful (2) wishful
(3) favourite (4) unfair

**99.** (1) position (2) growth
(3) status (4) symbol

**100.** (1) emotionally
(2) scientifically
(3) manually
(4) economically

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (3) | **2.** (4) | **3.** (2) | **4.** (3) |
| **5.** (4) | **6.** (4) | **7.** (3) | **8.** (2) |
| **9.** (1) | **10.** (4) | **11.** (2) | **12.** (2) |
| **13.** (4) | **14.** (2) | **15.** (4) | **16.** (1) |
| **17.** (2) | **18.** (3) | **19.** (2) | **20.** (3) |
| **21.** (1) | **22.** (2) | **23.** (3) | **24.** (2) |
| **25.** (1) | **26.** (4) | **27.** (4) | **28.** (4) |
| **29.** (3) | **30.** (2) | **31.** (1) | **32.** (1) |
| **33.** (2) | **34.** (2) | **35.** (1) | **36.** (3) |
| **37.** (2) | **38.** (2) | **39.** (1) | **40.** (2) |
| **41.** (2) | **42.** (1) | **43.** (2) | **44.** (1) |
| **45.** (2) | **46.** (3) | **47.** (2) | **48.** (4) |
| **49.** (3) | **50.** (3) | **51.** (1) | **52.** (3) |
| **53.** (1) | **54.** (2) | **55.** (4) | **56.** (2) |
| **57.** (3) | **58.** (3) | **59.** (3) | **60.** (4) |
| **61.** (1) | **62.** (1) | **63.** (3) | **64.** (1) |
| **65.** (4) | **66.** (2) | **67.** (2) | **68.** (2) |
| **69.** (4) | **70.** (1) | **71.** (2) | **72.** (3) |
| **73.** (1) | **74.** (4) | **75.** (*) | **76.** (1) |
| **77.** (2) | **78.** (4) | **79.** (1) | **80.** (1) |
| **81.** (1) | **82.** (4) | **83.** (3) | **84.** (1) |
| **85.** (4) | **86.** (4) | **87.** (2) | **88.** (2) |
| **89.** (4) | **90.** (4) | **91.** (3) | **92.** (3) |
| **93.** (1) | **94.** (3) | **95.** (2) | **96.** (2) |
| **97.** (1) | **98.** (4) | **99.** (1) | **100.** (4) |

## EXPLANATIONS

**1.** (3) Fire burns something. Similarly, Ice freezes something.

**2.** (4) K L M N ⟶ I J K L (each letter –2)

Similarly,

T U V W ⟶ R S T U (each letter –2)

**3.** (2) $3 \Rightarrow 3 \times 3 \times 3 = 27$
Similarly, $4 \Rightarrow 4 \times 4 \times 4 = 64$

**4.** (3) Except Polo, all others are indoor games.

**5.** (4) D $\xrightarrow{+3}$ G $\xrightarrow{+3}$ J
K $\xrightarrow{+3}$ N $\xrightarrow{+3}$ Q
R $\xrightarrow{+3}$ U $\xrightarrow{+3}$ X
But,
I $\xrightarrow{+3}$ L $\xrightarrow{+2}$ N

**6.** (4) Except the number 49, all others are Prime Numbers. The number 49 is a perfect square.

**7.** (3) Arrangement of words as per order in the dictionary :
5. Satire
↓
4. Stamped
↓
1. Storm
↓
3. Strangle
↓
2. Strap

**8.** (2) B $\xrightarrow{+2}$ D $\xrightarrow{+2}$ F $\xrightarrow{+2}$ H
T $\xrightarrow{-2}$ R $\xrightarrow{-2}$ P $\xrightarrow{-2}$ N

**9.** (1) There are two alternating series :
(i) $3 + 2 = 5$
$5 + 3 = 8$
$8 + 4 = 12$
$12 + 5 = 17$
(ii) $(2)^3 = 8$
$(3)^3 = 27$
$(4)^3 = 64$
$(5)^3 = 125$
$(6)^3 = \boxed{216}$

**10.** (4) Suppose the present age of P = 5$x$ years
Present age of Q = 8$x$ years
3 years hence
Age of P = $5x + 3$
Age of Q = $8x + 3$
According to question
$$\frac{5x+3}{8x+3} = \frac{8}{11}$$
$\Rightarrow 55x + 33 = 64x + 24$
$\Rightarrow 64x - 55x = 33 - 24$
$\Rightarrow 9x = 9$
$$\therefore x = \frac{9}{9} = 1$$
Present age of Q = $8x = 8 \times 1$ = 8 years

**11.** (2) Only grandson of lady's mother is the son of Diwakar. It means, lady's mother is mother of Diwakar. The lady is sister of Diwakar.

**12.** (2) There is no 'E' letter in the given word. Therefore, the word GLOBE cannot be formed.
B I O [L O G I C] A L
⇒ LOGIC
[B I] O L O G I C [A L]
⇒ BAIL
[B I] O [L] O G I C A [L]
⇒ BILL

**13.** (4)
who △are ○you ⟶ ④ 3 △2
[they] is ○you ⟶ ④ 8 [5]
[they] △are dangerous ⟶ △2 9 [5]

**14.** (2)

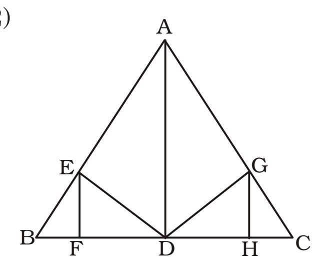
| P ⇒ × | R ⇒ – |
|---|---|
| S ⇒ + | Q ⇒ ÷ |

Option (1)
18 R 60 Q 15 S 2 = 8
$\Rightarrow 18 - 60 \div 15 + 2 = 8$
$\Rightarrow 18 - 4 + 2 = 8$
$\Rightarrow 20 - 4 = 8$
$\Rightarrow 16 \neq 8$
Option (2)
15 S 16 Q 2 P 4 = 47
$\Rightarrow 15 + 16 \div 2 \times 4 = 47$
$\Rightarrow 15 + 32 = 47$
$\Rightarrow 47 = 47$
Option (3)
3 P 5 R 18 Q 3 = 6
$\Rightarrow 3 \times 5 - 18 \div 3 = 6$
$\Rightarrow 15 - 6 = 6$
$\Rightarrow 9 \neq 6$
Option (4)
15 S 28 Q 4 P 2 = 27
$\Rightarrow 15 + 28 \div 4 \times 2 = 27$
$\Rightarrow 15 + 14 \neq 27$
$\Rightarrow 29 \neq 27$

**15.** (4)
4 * 7 * 2 ⟶ 3 6 1 (each –1)
5 * 9 * 1 ⟶ 4 8 0 (each –1)
Therefore,
2 * 1 * 3 ⟶ 1 0 2 (each –1)

**16.** (1) First Row
$3 \times 10 \times 6 + 6 = 186$
Second Row
$9 \times 5 \times 3 + 3 = 138$
Third Row
$5 \times 7 \times 1 + 1 = 36$
Fourth Row
$3 \times 2 \times 5 + 5 = \boxed{35}$

**17.** (2)




The triangles are :
Δ EFB; Δ EFD; Δ EBD;
Δ ADE; Δ ADB; Δ ADC;
Δ ADG; Δ GHC; Δ GHD;
Δ GCD; Δ ABC

Thus, there are 11 triangles in the given figure.

**18.** (3) Both the Premises are Universal Affirmative (A-type).

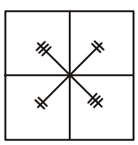
All cups are vegetables.

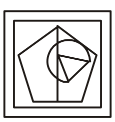
All vegetables are pens.

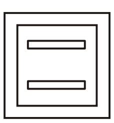
A + A ⇒ A-type of Conclusion "All cups are pens".
Conclusion II is the Converse of it.
Conclusion I is the Converse of the second Premise.

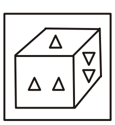
**19.** (2) The numbers 2, 3, 4 and 6 lie on the faces adjacent to the number '1'. Therefore, '5' lies opposite '1'.

**20.** (3) Musical toys can be represented by the numbers present in the circle and the rectangle. Such numbers are 14 and 28.
Required sum ⇒ 14 + 28 = 42

**21.** (1) 

**22.** (2) 

**23.** (3) 

**24.** (2) 

**25.** (1) S ⇒ 04, 10, 21, 32, 43
P ⇒ 03, 12, 24, 31, 40
E ⇒ 02, 11, 20, 33, 44
A ⇒ 57, 66, 75, 89, 98
K ⇒ 58, 67, 76, 85, 99

| Option | S | P | E | A | K |
|---|---|---|---|---|---|
| (1) | 10 | 12 | 11 | 66 | 58 |
| (2) | 43 | 31 | 33 | 89 | 86 |
| (3) | 21 | 40 | 44 | 56 | 99 |
| (4) | 32 | 03 | 20 | 97 | 66 |

**26.** (4) There are two methods that the RBI uses for credit control in the economy: Qualitative method (Marginal requirement, Rationing of credit, Direct action, Moral Suasion, etc) and Quantitative method (Bank rate, Open Market Operations, Cash Reserve Ratio, Statutory Liquidity Ratio, etc).

**27.** (4) Consumer's Equilibrium is related to microeconomics, the study of the behaviour of the individual units (like an individual firm or an individual consumer) of the economy. It refers to the situation when a consumer is having maximum satisfaction with limited income and has no tendency to change his way of existing expenditure. The consumer has to pay a price for each unit of the commodity. So, he cannot buy or consume unlimited quantity.

**28.** (4) The Fundamental Duties of citizens are provided in Article 51A under Part IVA of Indian Constitution. They were added to the Constitution by the 42nd Amendment in 1976, upon the recommendations of the Swaran Singh Committee. Originally ten in number, the Fundamental Duties were increased to eleven by the 86th Amendment in 2002

**29.** (3) According to Article 157 of Indian constitution, no person shall be eligible for appointment as Governor unless he is a citizen of India and has completed the age of thirty-five years. Governors are appointed by the President for a term of five years.

**30.** (2) Guru Tegh Bahadur was appointed as the as the ninth guru of Sikhs in 1664 A.D after the eighth Guru Kar Kishan contracted smallpox. He was publicly beheaded in 1675 on the orders of Mughal emperor Aurangzeb in Delhi for refusing to convert to Islam.

**31.** (1) Permanent land revenue settlement was introduced in 1793 by Lord Cornwallis in one fifth of British territory in India, including Bengal, Bihar, Orissa, parts of Northern Karnataka, Varanasi and some other areas. Under it, the zamindars of Bengal were recognised as the owners of land as long as they paid the revenue to the East India Company regularly.

**32.** (1) The 49th parallel is used as an informal name for the Canadian border with the USA, which is marked out by the parallel line of latitude at 49°N.It forms a border between the Canadian provinces of British Columbia, Alberta, Saskat-chewan, and Manitoba (to the north), and the US states of Washington, Idaho, Montana, North Dakota, and Minnesota (to the south).

**33.** (2) La Niña is a climate pattern that describes the cooling of surface waters of the Pacific Ocean along the tropical west coast of South America. La Nina is considered to be the counterpart to El Nino, which is characterized by unusually warm ocean temperatures in the equatorial region of the Pacific Ocean.

**34.** (2) Cinnamon is a spice obtained from the inner bark of several tree species from the genus Cinnamomum. Cinnamon is used mainly as an aromatic condiment and flavoring additive in a wide variety of cuisines. The aroma and flavor of cinnamon derive from its essential oil and principal component, cinnamaldehyde, as well as numerous other constituents, including eugenol.

**35.** (1) Insulin is a hormone made by the pancreas that allows our body to use sugar (glucose) from carbohydrates in the food that

we eat for energy or to store glucose for future use. Insulin helps keeps your blood sugar level from getting too high (hyperglycemia) or too low (hypoglycemia).

**36.** (3) A pulmonary artery is an artery in the pulmonary circulation that carries deoxygenated blood from the right side of the heart to the lungs. The pulmonary arteries are unique in that unlike most arteries which carry oxygenated blood to other parts of the body, the pulmonary arteries carry de-oxygenated blood to the lungs. After picking up oxygen, the oxygen rich blood is returned to the heart via the pulmonary veins.

**37.** (2) Water in a swimming pool or water tank appears shallower than its depth because of the refraction of light. The light travels straight as long as it is in the water, but if it emerges obliquely from the water into the air it is bent downward toward the surface. This bending is known as refraction, and it occurs whenever light passes from one transparent medium into another of different density. The eyes do not take refraction into account, but judge the position of the object as if the light came in a straight line.

**38.** (2) Red, green and blue are the primary colors and all other colors can be created from them. When red and green combine, the result is yellow. When red and blue combine, the result is magenta. When blue and green combine, the result is cyan.

**39.** (1) JPEG stands for Joint Photographic Experts Group. It is an ISO/IEC group of experts that develops and maintains standards for a suite of compression algorithms for computer image files. It is also a term for any graphic image file produced by using a JPEG standard. Together with the Graphic Interchange Format (GIF) and Portable Network Graphics (PNG) file formats, JPEG is one of the image file formats supported on the World Wide Web.

**40.** (2) The term endothermic process describes a process or reaction in which the system absorbs energy from its surroundings; usually in the form of heat. The concept is frequently applied in physical sciences to, for example, chemical reactions, where thermal energy (heat) is converted to chemical bond energy.

**41.** (2) Cryolite ($Na_2NaAlF_6$) is a double fluoride of sodium and aluminium which in terms of chemical composition is referred to as sodium hexafluoroaluminate. It was historically used as an aluminium ore and later in the electrolytic processing of the aluminium ore bauxite. It is also used in the glass and enamel industries.

**42.** (1) The Bhopal gas tragedy involved the leakage of poisonous methyl isocyanate (MIC) gas and other chemicalsat the Union Carbide India Limited pesticide plant in Bhopal, Madhya Pradesh, on 2–3 December 1984. It is considered the world's worst industrial disaster.

**43.** (2) The Employees' State Insurance Corporation (ESIC), in November 2016, launched 'Kahin Bhi-Kabhi Bhi' medical service for its insured in the Delhi region under which the beneficiaries can visit day-care units for minor ailments. Now, insured persons and their family members of Delhi need not visit ESIC hospitals for minor ailments requiring only day care like diarrhoea, high fever, acute asthma attacks, abdominal pain, chest pain and the like.

**44.** (1) Joseph Thomson: an English physicist credited with the discovery and identification of the electron; Alexander Fleming: a Scottish physician, who discovered the world's first antibiotic substance Penicillin in 1928; Narinder Kapany: an Indian-born American Sikh physicist known for his work in fibre optics; Marie Curie: a Polish and naturalized-French physicist who discovered polonium and radium.

**45.** (2) A gambit (from ancient Italian gambetto, meaning "to trip") is a chess opening in which a player, more often White, sacrifices material, usually a pawn, with the hope of achieving a resulting advantageous position. Some well-known examples are the King's Gambit, Queen's Gambit and Evans Gambit.

**46.** (3) Madhuri Dixit is a trained professional Kathak dancer. Pandit Birju Maharaj, a Kathak dancer, who choreographed Dixit in the film Devdas for the song "Kaahe Chhed", calls her "the best Bollywood dancer due to her versatility." Kathak is one of the ten major forms of Indian classical dance.

**47.** (2) Arjun Singh of Uttarakhand, on 26 January 2016, received the 2016 National Bravery Award for showing indomitable courage in saving his mother from an attack by a leopard in July 2014. He was honoured with the Sanjay Chopra Award.

**48.** (4) 'My Story' is the autobiography of former Australian captain and batsman Michael Clarke. Bursting onto the scene in 2004 with a Test century on debut, Michael Clarke was Australian cricket's golden boy. And the batting prodigy they nicknamed 'Pup' certainly fulfilled his destiny

in a stellar 11-year international career of 115 Tests, 8643 runs and 28 centuries.

**49.** (3) Israel, in November 2016, revived plans to build 500 new homes for Jewish settlers in in Ramat Shlom in occupied East Jerusalem. The plans had been on hold since 2014. More than 200,000 Israelis now live in east Jerusalem, which Israel occupied in the Six-Day War of 1967 and later annexed.

**50.** (3) South Asian Association for Regional Cooperation (SAARC) is a regional grouping of eight countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. It was set up in Dhaka on 8 December 1985. China is one of the countries that have been accorded observer status in SAARC.

**51.** (1) 5000
$= 2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$
$= 2^2 \times 5^2 \times 5^2 \times 2$
$\therefore$ Required number
= 2 which has not its pair.
Illustration $\Rightarrow 5000 \div 2 = 2500 = (50)^2$

**52.** (3) Ratio of 1 day's work of A, B and C $= \frac{1}{8} : \frac{1}{10} : \frac{1}{12}$

$= \left(\frac{1}{8} \times 120\right) : \left(\frac{1}{10} \times 120\right) : \left(\frac{1}{12} \times 120\right)$

[$\because$ LCM of 8, 10 and 12 = 120]
= 15 : 12 : 10
Sum of the terms of ratio
= 15 + 12 + 10 = 37
$\therefore$ B's share

$= \text{Rs. } \left(\frac{12}{37} \times 7400\right)$

= Rs. 2400

**53.** (1) New radius of cylinder

$= \frac{5r}{4}$ units

Volume of new cylinder

$= \pi \left(\frac{5r}{4}\right)^2 \times h_1$

According to the question,

$\pi \frac{25}{16} r^2 \times h_1 = \pi r^2 h$

$\Rightarrow h_1 = \frac{16}{25} h$

$\therefore$ Percentage decrease in height $= \left(1 - \frac{16}{25}\right) \times 100$

$= \frac{9}{25} \times 100 = 36\%$

**54.** (2) C.P. of article = Rs. 100
$\therefore$ Its marked price = Rs. 120
After a discount of 5%,

Its S.P. = Rs. $\left(\frac{120 \times 95}{100}\right)$

= Rs. 114
$\therefore$ Profit per cent = 14%

**55.** (4) $\frac{A}{B} = \frac{2}{5}; \frac{B}{C} = \frac{4}{3}$

$\therefore \frac{A}{B} \times \frac{B}{C} = \frac{2}{5} \times \frac{4}{3}$

$\Rightarrow \frac{A}{C} = \frac{8}{15}$

$\therefore$ A : C = 8 : 15 = 16 : 30
C : D = 2 : 1 = 30 : 15
$\therefore$ A : C : D = 16 : 30 : 15

**56.** (2) Required average of runs conceded $= \frac{5 \times 45 + 4 \times 15.75}{5 + 4}$

$= \frac{225 + 63}{9} = \frac{288}{9} = 32$

**57.** (3) C.P. of 15 pens

$= \left(\frac{100}{25} \times 15\right)$ paise

= 60 paise
Their S.P. = 100 paise
$\therefore$ Profit per cent

$= \left(\frac{100 - 60}{60}\right) \times 100$

$= \frac{200}{3} = 66\frac{2}{3}\%$

**58.** (3) In 80 litres of mixture,
Quantity of milk = 8 litres
Quantity of milk added
= $x$ litres
According to the question,

$\frac{8 + x}{80 + x} = \frac{20}{100} = \frac{1}{5}$

$\Rightarrow 5x + 40 = 80 + x$
$\Rightarrow 5x - x = 80 - 40$
$\Rightarrow 4x = 40$

$\Rightarrow x = \frac{40}{4} = 10$ litres

**59.** (3) It is an arithmetic series where
$a = 21; d = 3; S = 252; n = ?$

$S = \frac{n}{2} [2a + (n - 1) d]$

$\Rightarrow 252 = \frac{n}{2} [2 \times 21 + (n - 1)^3]$

$\Rightarrow 504 = n (42 + 3n - 3)$
$\Rightarrow 504 = n (3n + 39)$
$\Rightarrow 504 = 3n (n + 13)$

$\Rightarrow n (n + 13) = \frac{504}{3} = 168$

$\Rightarrow n (n + 13) = 8 \times 21$
$= 8 (8 + 13)$
$\Rightarrow n = 8$ hours

**60.** (4) S.I. for two years
= Rs. (448 – 400)
= Rs. 48

$\therefore \text{Rate} = \frac{\text{Interest} \times 100}{\text{Principal} \times \text{Time}}$

$= \frac{48 \times 100}{400 \times 2} = 6\%$ per annum

Case II,
Interest = Rs. (682 – 550)
= Rs. 132

$\therefore \text{Time} = \frac{132 \times 100}{550 \times 6} = 4$ years

**61.** (1) Expression

$= \frac{1 + x}{1 - x^4} \div \frac{x^2}{1 + x^2} \times (x)(1 - x)$

$= \frac{(1 + x)}{(1 + x^2)(1 - x^2)} \times \frac{1 + x^2}{x^2} \times x (1-x)$

$= \frac{1+x}{(1-x)(1+x)} \times \frac{1}{x^2} \times x(1-x)$

$= \frac{1}{x}$

**62.** (1) It is given,

$x + \frac{1}{x} = 17$

Expression $= \frac{x^4 + \frac{1}{x^2}}{x^2 - 3x + 1}$

$= \frac{x\left(x^3 + \frac{1}{x^3}\right)}{x\left(x - 3 + \frac{1}{x}\right)}$

$= \frac{\left(x + \frac{1}{x}\right)^3 - 3\left(x + \frac{1}{x}\right)}{\left(x + \frac{1}{x} - 3\right)}$

$= \frac{(17)^3 - 3 \times 17}{(17-3)}$

$= \frac{4913 - 51}{14} = \frac{4862}{14} = \frac{2431}{7}$

**63.** (3) $\sqrt{\frac{1+x}{x}} - \sqrt{\frac{x}{1+x}} = \frac{1}{\sqrt{6}}$

On squaring both sides,

$\left(\sqrt{\frac{1+x}{x}} - \sqrt{\frac{x}{1+x}}\right)^2 = \frac{1}{6}$

$\Rightarrow \frac{1+x}{x} + \frac{x}{1+x} - 2 = \frac{1}{6}$

$\Rightarrow \frac{1+x}{x} + \frac{x}{1+x} = 2 + \frac{1}{6} = \frac{13}{6}$ $\Rightarrow$

$\frac{(1+x)^2 + x^2}{x(1+x)} = \frac{13}{6}$

$\Rightarrow \frac{1 + x^2 + 2x + x^2}{x + x^2} = \frac{13}{6}$

$\Rightarrow (2x^2 + 2x + 1)\, 6 = 13\,(x + x^2)$

$\Rightarrow 12x^2 + 12x + 6 = 13x + 13x^2$

$\Rightarrow x^2 + x - 6 = 0$

$\Rightarrow x^2 + 3x - 2x - 6 = 0$

$\Rightarrow x\,(x + 3) - 2\,(x + 3) = 0$

$\Rightarrow (x - 2)\,(x + 3) = 0$

$\Rightarrow x = 2$ as. $x \neq -3$

**OR**

Of the given options,
when $x = 2$

L.H.S. $= \sqrt{\frac{1+2}{2}} - \sqrt{\frac{2}{1+2}}$

$= \frac{\sqrt{3}}{\sqrt{2}} - \frac{\sqrt{2}}{\sqrt{3}} = \frac{3-2}{\sqrt{6}} = \frac{1}{\sqrt{6}}$

**64.** (1) $2\left[x^2 + \frac{1}{x^2}\right] - 2\left[x - \frac{1}{x}\right] - 8 = 0$

$\Rightarrow 2\left[\left(x - \frac{1}{x}\right)^2 + 2\right] - 2\left[x - \frac{1}{x}\right] - 8 = 0$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 - \left(x - \frac{1}{x}\right) - 2 = 0$

$\Rightarrow y^2 - y - 2 = 0$ where $x - \frac{1}{x} = y$

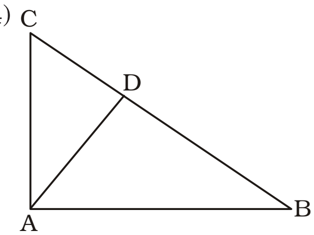
$\Rightarrow y^2 - 2y + y - 2 = 0$

$\Rightarrow y\,(y - 2) + 1\,(y - 2) = 0$

$\Rightarrow (y - 2)\,(y + 1) = 0$

$\Rightarrow y = 2$ or $-1$

**65.** (4)




$\angle BAC = 90°$ ; $\angle ADC = 90°$

BD = 7 cm., CD = 28 cm.

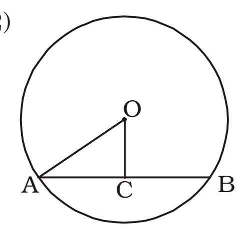
$\therefore AD^2 = BD \times CD$

$= 7 \times 28$

$\therefore AD = \sqrt{7 \times 28} = \sqrt{7 \times 7 \times 4}$

= 14 cm.

**66.** (2)




$OC \perp AB$

$\therefore$ AC = CB = 30 cm.

OC = 16 cm.

In $\Delta$ OAC,

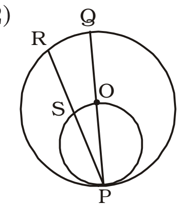
$OA = \sqrt{AC^2 + CO^2}$

$= \sqrt{30^2 + 16^2}$

$= \sqrt{900 + 256}$

$= \sqrt{1156} = 34$ cm.

**67.** (2)

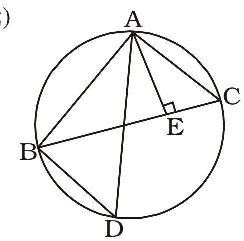



The radius of smaller circle is half of that of larger circle.

PO = OQ ; By symmetry

$PS = SR = \frac{34}{2} = 17$ cm.

**68.** (2)




In $\Delta$ ABD and $\Delta$ AEC,

$\angle ADB = \angle BCA$

$\angle BAD = \angle AEC = 90°$

By AA-similarity

$\Delta ABD \sim \Delta AEC$

$\therefore \frac{AD}{BA} = \frac{AC}{AE}$

$\Rightarrow \frac{AD}{10} = \frac{6}{4}$

$\Rightarrow AD = \frac{6 \times 10}{4} = 15$

$\therefore$ Ex-radius $= \frac{15}{2}$

= 7.5 cm.

**69.** (4) $\text{cosec}^6 A - \cot^6 A - 3\,\text{cosec}^2 A . \cot^2 A\,(\text{cosec}^2 A - \cot^2 A)$

$= (\text{cosec}^2 A)^3 - (\cot^2 A)^3 - 3\text{cosec}^2 A\,.\,\cot^2 A\,(\text{cosec}\,A^2 - \cot^2 A)$

$= (\text{cosec}^2A - \cot^2A)^3 = 1$

$[\because \text{cosec}^2A - \cot^2A = 1]$

**70.** (1) $\sqrt{\frac{(\sec A - 1)}{(\sec A + 1)}}$

$= \sqrt{\frac{\left(\frac{1}{\cos A} - 1\right)}{\left(\frac{1}{\cos A} + 1\right)}}$

$= \sqrt{\frac{1 - \cos A}{1 + \cos A}} = \sqrt{\frac{(1 - \cos A)^2}{(1 + \cos A)(1 - \cos A)}}$

$= \sqrt{\frac{(1 - \cos A)^2}{1 - \cos^2 A}} = \sqrt{\frac{(1 - \cos A)^2}{\sin^2 A}}$

$= \frac{1 - \cos A}{\sin A} = \frac{1}{\sin A} - \frac{\cos A}{\sin A}$

$= \text{cosec}A - \cot A$

**71.** (2) $\tan 2A = \frac{2\tan A}{1 - \tan^2 A}$

$= \frac{2 \times \frac{1}{2}}{1 - \frac{1}{4}} = \frac{1}{\frac{3}{4}} = \frac{4}{3}$

$\therefore$ tan (2A + B)

$= \frac{\tan 2A + \tan B}{1 - \tan 2A . \tan B}$

$= \frac{\frac{4}{3} + \frac{1}{3}}{1 - \frac{4}{3} \times \frac{1}{3}} = \frac{\frac{5}{3}}{1 - \frac{4}{9}} = \frac{\frac{5}{3}}{\frac{5}{9}}$

$= \frac{5}{3} \times \frac{9}{5} = 3$

**72.** (3) Corresponding per cent for paint and frame = (22 + 13)% = 35%

$\because$ 100% $\equiv$ 300 hours

$\therefore 35\% \equiv \frac{300}{100} \times 35$

= 105 hours

**73.** (1) $\because$ 6% $\equiv$ 192 hours

$\therefore 8\% \equiv \frac{192}{6} \times 8$

= 256 hours

**74.** (4) Percentage difference for time taken for frame and glass = (22 – 8)% = 14%

$\because$ (40 + 11)% $\equiv$ 127.5 hours

$\therefore$ 51% $\equiv$ 127.5 hours

$\therefore 14\% \equiv \frac{127.5}{51} \times 14$

= 35 hours

**75.** (*) Corresponding per cent for seats and glass = (8 + 6)% = 14%

Actual per cent = $\frac{14 \times 85}{100}$

= 11.9%

$\therefore$ New sectorial angle

= 11.9 × 3.6 = 42.84

**76.** (1) Here, the little knowledge of playing volleyball ..... should be used as that ...... has been used . Which makes it definite.

**77.** (2) Have done with it = to do something unpleasant as quickly as possible, so that it is finished.

Hence, so I thought to have done with it when the should be used here.

**78.** (4) **Meet with a failure** = to be unsuccessful

**79.** (1) **Call for** = to demand that something happens

**Look at the sentence :**

Members have called for his resignation.

**80.** (1) **Eloquent (Adjective)** = fluent or persuasive in speaking or writing ; giving a clear, strong message.

**Look at the sentence :**

The pictures were an eloquent reminder of the power of the volcano.

**81.** (1) **Nefarious (Adjective)** = wicked or criminal; morally bad; iniquitous.

**Look at the sentence :**

The company's CEO seems to have been involved in some nefarious practices.

**82.** (4) **Ensconce (Verb)** = establish or settle in a comfortable, safe place; hide.

**Unveil (Verb)** = remove a covering.; reveal; divulge.

**Look at the sentences :**

He is now firmly ensconced in his new home.

The memorial to those who had died in the war was unveiled by the queen.

**83.** (3) **Lugubrious (Adjective)** = looking or sounding sad; gloomy; unhappy.

**Optimistic (Adjective)** = hopeful and confident; positive; cheerful.

**Look at the sentences :**

His face looked even more lugubrious than usual.

He is optimistic about his chances of winning a gold medal.

**84.** (1) **End in a fiasco** = to end with a failure.

**Look at the sentence :**

The show ended in a fiasco- one actor forgot his lines and another fell off the stage.

**85.** (4) **Sow wild oats** = engage in a period of wild or irresponsible behaviour while young.

**Look at the sentence :**

He sowed his wild oats before settling down.

**87.** (2) **Let (Verb)** = give permission to; to allow

Hence, let you have (get) .... should be used here.

**90.** (4) **Annual (Adjective)** = occurring once every year.

**91.** (3) **Traceable (Adjective)** = able to be found or discovered.

**94.** (3) **Conducting** ⇒ being conducted.

**95.** (2) said to me ⇒ asked me

Where is the telephone exchange ? ⇒ Where the telephone exchange was.

**100.** (4) **Economically** = in a way that relates to economics or finance.

❑❑❑

**SET 14**

# SOLVED PAPER
# SSC CGL TIER-I (CBE) EXAM

**Held on : 11.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Hockey : Stick : : Boxing : ?
(1) Bat (2) Ball
(3) Sword (4) Gloves

**2.** In the following question, select the related letters from the given alternatives :
FS : LY : : IV : ?
(1) GT (2) HS
(3) IR (4) TZ

**3.** In the following question, select the related number pair from the given alternatives :
19 : 367 : : ? : ?
(1) 21 : 447 (2) 22 : 491
(3) 29 : 850 (4) 31 : 963

**4.** In the following question, select the odd word from the given alternatives :
(1) Sea (2) Ocean
(3) Lake (4) Marsh

**5.** In the following question, select the odd letter group from the given alternatives :
(1) AJ (2) EN
(3) NW (4) PW

**6.** In the following question, select the odd number from the given alternatives :
(1) 170 (2) 290
(3) 360 (4) 530

**7.** Arrange the given words in the sequence in which they occur in the dictionary.
1. Effacers
2. Effacing
3. Effaceable
4. Effacements
5. Effacement
(1) 34125 (2) 35412
(3) 43152 (4) 43215

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
C11, V17, O23, ?
(1) H30 (2) H29
(3) I29 (4) I31

**9.** In the following question, select the missing number from the given alternatives :
19, 26, 45, 71, 116, ?
(1) 166 (2) 172
(3) 184 (4) 187

**10.** Abhinav travels 10 km north then turns left. Then he travels 6 km and turns right and cover another 7 km. He finally turns to right and travels another 6 km. How far (in km) is he from the point of starting his journey?
(1) 14 (2) 16
(3) 15 (4) 17

**11.** In the English alphabet, which letter is 13th from right end?
(1) L (2) M
(3) N (4) O

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**HANDSOME**
(1) HATS (2) HOME
(3) NAME (4) SAND

**13.** In a certain code language, "ACCOUNT" is written as "DFFRXQW". How is "MATHS" written in that code language?
(1) PDWKV (2) PKLKP
(3) PEWLU (4) PWDVK

**14.** If "–" means "divided by", "+" means "multiplied by", "÷" means "added to", "×" means "subtracted from", then
11 ÷ 6 – 2 + 5 × 3 = ?
(1) 17 (2) 21
(3) 23 (4) 26

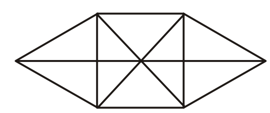
**15.** If 3 # 6 * 9 = 45 and 9 # 8 * 7 = 105, then what is the value of 5 * 6 # 3 = ?
(1) 14 (2) 68
(3) 86 (4) 90

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

| 336 | 170 | 748 |
|---|---|---|
| 523 | 78 | 349 |
| 431 | ? | 328 |

(1) 33 (2) 34
(3) 36 (4) 37

**17.** How many triangles are there in the given figure ?

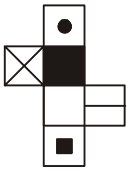


(1) 16 (2) 20
(3) 22 (4) 24

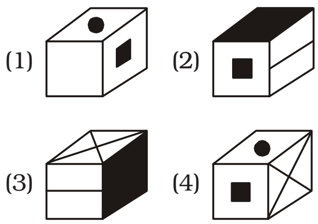
**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.
**Statements :**
I. All bags are tables.
II. No table is red.
**Conclusions :**
I. Some bags are red.
II. All bags are red.
(1) Only Conclusion I follows.
(2) Only Conclusion II follows.
(3) Neither Conclusion I nor Conclusion II follows.
(4) Both Conclusions follow.

**19.** From the given options, which figure can be formed by folding the figure given in the question ?

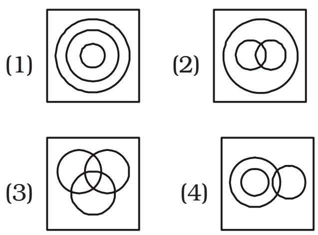
**Question Figure :**



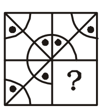
**Answer Figures :**



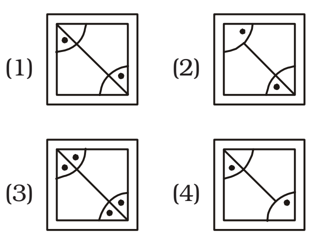
**20.** Identify the diagram that best represents the relationship among the given classes.
Bull, Animal, Carnivorous



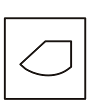
**21.** Which answer figure will complete the pattern in the question figure?
**Question Figure :**



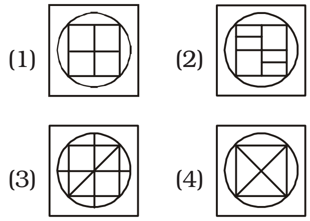
**Answer Figures :**



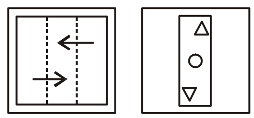
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.
**Question Figure :**



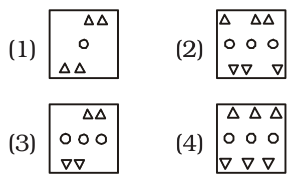
**Answer Figures :**



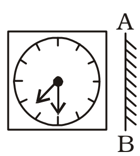
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?
**Question Figures :**



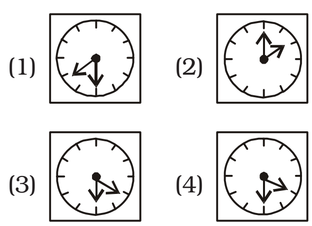
**Answer Figures :**



**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?
**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'P' can be represented by 02, 10 etc. and 'G' can be represeted by 66, 98 etc. Similarly, you have to identify the set for the word **'TRAIL'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | I | T | P | R | U |
| 1 | P | R | U | I | T |
| 2 | T | I | R | U | P |
| 3 | R | U | T | P | I |
| 4 | U | P | I | T | R |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | G | A | L | H | S |
| 6 | H | G | S | A | L |
| 7 | A | L | G | S | H |
| 8 | S | H | A | L | G |
| 9 | L | S | H | G | A |

(1) 01, 03, 75, 00, 68
(2) 14, 30, 68, 13, 58
(3) 20, 44, 99, 21, 96
(4) 43, 11, 56, 34, 88

## GENERAL AWARENESS

**26.** Which of the following rate is charged by banks to their most credit worthy customers?
(1) Prime Lending Rate
(2) Statutory Liquidity Rate
(3) Bank Rate
(4) Repo Rate

**27.** Medium term loans are provided for a period of _____.
(1) 1 year to 2 years
(2) 15 months to 3 years
(3) 15 months to 4 years
(4) 1 year to 3 years

**28.** Which of the following is a feature of federal Government?
(1) Supremacy of Parliament
(2) Supremacy of Judiciary
(3) Division of powers between federal and state Government
(4) Single citizenship

**29.** Under which article, President of India can proclaim financial emergency?
(1) Article 32
(2) Article 349
(3) Article 360
(4) Article 355

**30.** Who was the founder of the Ghadar Party?
(1) Basant Kumar Biswas
(2) Sohan Singh Bhakna
(3) Ram Prasad Bismil
(4) Bhagat Singh

**31.** In which year (in AD) was the East India Company established?
(1) 1664 (2) 1632
(3) 1600 (4) 1608

**32.** Himalayan mountain range falls under which type of mountains?
(1) Block Mountain
(2) Residual Mountain
(3) Accumulated Mountain
(4) Fold Mountain

**33.** 'Norwesters' are thunder storms which are prominent in
(1) India and Bhutan
(2) Bhutan and Nepal
(3) India and Bangladesh
(4) Bangladesh and Myanmar

**34.** UV rays coming from Sun, majorly causes which cancer?
(1) Lungs cancer
(2) Liver cancer
(3) Mouth cancer
(4) Skin cancer

**35.** Which of the following is the largest mammal?
(1) Whale
(2) Rhinoceros
(3) Elephant
(4) Human

**36.** What is the full form of RNA?
(1) Ribonucleic Acid
(2) Ribonitric Acid
(3) Ribonutrient Acid
(4) Reverse Nucleic Acid

**37.** At which of the following place, weight of an object is maximum?
(1) At poles
(2) At equator
(3) At tropic of Capricorn
(4) At tropic of cancer

**38.** What is the SI unit of temperature?
(1) Kelvin (2) Joule
(3) Celsius (4) Fahrenheit

**39.** Netscape Navigator is a _____.
(1) graphical user interface
(2) programming language
(3) web browser
(4) processor

**40.** What is nature of pH of Milk?
(1) Slightly Acidic
(2) Slightly Basic
(3) Highly Acidic
(4) Highly Basic

**41.** Which among the following is not an example of emulsion?
(1) Chocolate-Milk
(2) Butter
(3) Whipped Cream
(4) Curd

**42.** Kyoto Protocol's (an international treaty to reduce greenhouse gas emissions) first meeting was held at which country?
(1) USA (2) Germany
(3) Japan (4) Switzerland

**43.** 'Lucky Grahak Yojana' and 'Digi Dhan Vyapar Yojana' to give cash awards to the customers and merchants was launched by which government body?
(1) National Institution for Transforming India
(2) National Payments Corporation of India
(3) Financial Stability and Development Council
(4) Reserve Bank of India

**44.** Who among the following devised the technique IVF (In vitro Fertilization)?
(1) Sir Frank Whittle
(2) Robert Edwards
(3) Edward Jenner
(4) Dr. Martin Cooper

**45.** 'Wimbledon' is a place associated with which of the following sports?
(1) Lawn tennis
(2) Badminton
(3) Hockey
(4) Cricket

**46.** Match the following.

| | Artist | | Art |
|---|---|---|---|
| 1. | Yamini Krishna Murthy | a. | Vocalist |
| 2. | M.S. Subbulakshmi | b. | Musician |
| 3. | Vishnu Diganbar Paluskar | c. | Bharatnatyam |
| 4. | Pt. Shivkumar Sharma | d. | Santoor |

(1) 1-c, 2-a , 3-b, 4-d
(2) 1-b, 2-a, 3-d, 4-c
(3) 1-d, 2-c, 3-b, 4-a
(4) 1-b, 2-c, 3-a, 4-d

**47.** Who is the recipient of Arjuna Award 2016 in the field of athletics?
(1) Vikas Gowda
(2) Lalita Babar
(3) Neeraj Chopra
(4) Seema Punia

**48.** Six Machine (I Don't Like Cricket .... I Love It) is an autobiography of which famous batsman?
(1) Virat Kohli
(2) AB De Velliers
(3) Chris Gayle
(4) Tillakaratne Dilshan

**49.** Which country is headed towards a confrontation over Gibraltar with Spain?
(1) France
(2) Morocco
(3) Germany
(4) United Kingdom

**50.** Which country has banned 'Facebook' ?
(1) China
(2) Bhutan
(3) Nepal
(4) Pakistan

## QUANTITATIVE APTITUDE

**51.** A fraction becomes $\frac{6}{5}$ when 5 is added to its numerator and becomes $\frac{1}{2}$ when 4 is added to its denominator. What will be the value of the fraction?

(1) $\frac{8}{9}$ (2) $\frac{7}{10}$
(3) $\frac{7}{8}$ (4) $\frac{6}{11}$

**52.** Amit can complete a work in 25 days and Punit can complete the same work in 20 days. Punit alone worked at it for 10 days and then left the work. In how many days will Amit alone complete the remaining work?

(1) $11\frac{1}{2}$ (2) $12\frac{1}{2}$
(3) $13\frac{1}{2}$ (4) $14\frac{1}{2}$

**53.** The measure of the four successive angles of a quadrilateral are in the ratio 7 : 11 : 7 : 11. The quadrilateral is a
(1) trapezium
(2) rectangle
(3) parallelogram
(4) square

**54.** What is the discount per cent offered on a book having marked price Rs. 2150 being sold at Rs. 1892?
(1) 12 (2) 13
(3) 14 (4) 16

**55.** Rs. 60500 is divided among A, B and C such that A receives $\frac{2}{9}$ of as much as B and C together and B receives $\frac{3}{7}$ of as much as A and C together. What is the share of C (in Rs.)?
(1) 29850 (2) 30120
(3) 31350 (4) 37250

**56.** The average age of a class of 6 girls is $x$ years. Four new girls having ages $x - 2$, $x + 2$, $x + 4$ and $x + 6$ join the class. What is the new average age (in years) of the class?
(1) $x + 1$ (2) $x + 2$
(3) $2.5x$ (4) $x + 2.5$

**57.** A dealer sells two machines at Rs. 12000 each. On one it gains 32% and on the other it loses 32%. What is its profit/loss per cent in the whole transaction?
(1) No gain and no loss
(2) 1% loss
(3) 18% profit
(4) 10.24% loss

**58.** How much water (in litres) must be added to 80 litres solution of milk and water containing 10% milk, so that it becomes a 5% milk solution?
(1) 10 (2) 20
(3) 40 (4) 80

**59.** A bus travels $\frac{2}{5}$ of a total journey at its usual speed. The remaining distance was covered by bus at $\frac{6}{7}$ of its usual speed. Due to slow speed it reaches its destination 50 minutes late. If the total distance is 200 kms, then what is the usual speed (in km/hr) of bus?
(1) 20.57 (2) 24
(3) 28 (4) 26 .52

**60.** For an amount, simple interest at the rate of interest of 12% per annum for 6 years is Rs. 25920. What will be the compound interest (in Rs.) on same amount at the rate of interest of 8% per annum compounded annually for 2 years?
(1) 4326.3 (2) 5563.4
(3) 5888.6 (4) 5990.4

**61.** If α and β are roots of the equation $3x^2 - 13x + 14 = 0$, then what is the value of $\left(\frac{\alpha}{\beta}\right)+\left(\frac{\beta}{\alpha}\right)$?

(1) $\frac{65}{28}$ (2) $\frac{53}{14}$
(3) 9 (4) $\frac{85}{42}$

**62.** If $a + b + c = 9$ and $ab + bc + ca = 18$, then what is the value of $a^3 + b^3 + c^3 - 3abc$?
(1) 189 (2) 243
(3) 361 (4) 486

**63.** If $\left(\frac{x}{y}\right)+\left(\frac{y}{x}\right)=1$, then what is the value of $(x^3 + y^3)$?
(1) –1 (2) 0
(3) 1 (4) 3

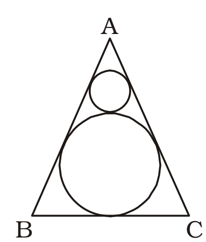
**64.** If $5^x = 30^{-y} = 6^z$, then what is the value of $\frac{(xy+yz+zx)}{xyz}$?
(1) 0 (2) 1
(3) 2 (4) 3

**65.** The internal bisectors of ∠Q and ∠R of triangle PQR meet at O. If ∠P = 70°, then what is the measure of ∠QOR (in degrees)?
(1) 110 (2) 115
(3) 125 (4) 135

**66.** If the areas of two similar triangle are in the ratio 5 : 7, then what is the ratio of the corresponding sides of these two triangles?
(1) 5 : 7 (2) 25 : 49
(3) $\sqrt{5}:\sqrt{7}$ (4) 125 : 343

**67.** ABCD is an isosceles trapezium such that AD||BC, AB = 5 cm, AD = 8 cm and BC = 14 cm. What is the area (in cm²) of trapezium?
(1) 36 (2) 44
(3) 88 (4) 144

**68.** In the given figure, ABC is an equilateral triangle. If the area of bigger circle is 1386 cm², then what is the area (in cm.²) of smaller circle?




(1) 144 (2) 154
(3) 288 (4) 462

**69.** What is the simplified value of

$$\left[\frac{\left(\tan^2\theta-\sin^2\theta\right)}{\tan^2\theta\sin^2\theta}\right]?$$

(1) –1 (2) 0
(3) 1 (4) 2

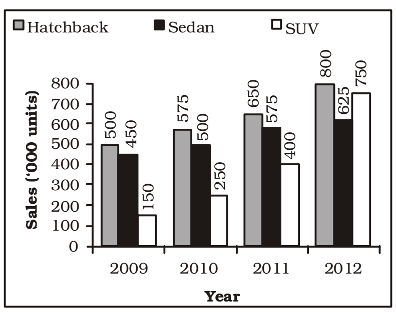
**70.** If sec (3*x* – 20°) = cosec (3*y* + 20°), then what is the value of tan (*x* + *y*)?

(1) 1 (2) $\sqrt{3}$
(3) $\frac{1}{\sqrt{3}}$ (4) $2\sqrt{3}$

**71.** If cot A = $\frac{n}{(n+1)}$ and cot B = $\frac{1}{(2n+1)}$, then what is the value of cot (A + B)?

(1) –1 (2) 0
(3) 1 (4) 2

**Directions (72–75) :** The bar chart given below shows the sales of three types of cars in the Indian automotive industry over 4 years. All the sales figures have been shown in terms of '000 units.




**72.** Which of the following type of car has the highest increase in sales from 2009 to 2012?
(1) Hatchback
(2) Both SUV and Hatchback
(3) SUV
(4) Sedan

**73.** What is the simple annual growth rate (in %) in the sales of SUV from 2009 to 2012?
(1) 90 (2) 100
(3) 133.33 (4) 150

**74.** What is the respective ratio of total sales of Sedan and total sales of SUV over the period of 4 years?
(1) 23 : 31 (2) 29 : 39
(3) 43 : 31 (4) 76 : 47

**75.** If all the three categories increase by same rate in 2013 over 2012 as they did in 2012 over 2011, then what will be the total approximate sales (in '000 units) of all the three categories taken together in year 2013?
(1) 2152 (2) 2345
(3) 3069 (4) 3568

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** I was shocked to hear (1)/ that her husband (2)/ died of an accident. (3)/ No Error (4)

**77.** The reason for (1)/ his failure is because (2)/ he didn't study at all. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Virat Kohli added another feather ________ his cap by his wonderful performance in the one day match.
(1) in (2) to
(3) into (4) on

**79.** Only when ________ failed, the army resorted to force.
(1) efforts
(2) arrests
(3) persuasions
(4) manipulations

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Pernicious**
(1) Beneficial
(2) Dangerous
(3) Innocuous
(4) Advantageous

**81. Stringent**
(1) Annoying
(2) Revengeful
(3) Incidental
(4) Rigorous

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Vexatious**
(1) Calamitous
(2) Treachery
(3) Soothing
(4) Pliable

**83. Burgeon**
(1) Bolster (2) Shrivel
(3) Mount (4) Amplify

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

**84. Live from hand to mouth**
(1) Filthy rich people
(2) To be dependent on others
(3) To have enough money to live on and nothing extra
(4) Living in miserable conditions.

**85. To face the music**
(1) To bear the consequences
(2) To disparage someone
(3) To be hard of hearing
(4) To enjoy a musical concert

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** He thanked me for what I **(have done)** for his wife.
(1) had done
(2) had been done
(3) have been done
(4) No improvement

**87. (Hardly nothing)** was offered to the victims of the earthquake.
(1) Hardly something
(2) Hardly anything
(3) Hardly little
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. Killing of one's own child**
(1) Foeticide
(2) Filicide
(3) Infanticide
(4) Lupicide

**89. A lover of work**
(1) Oenophile
(2) Technophile
(3) Romanophile
(4) Ergophile

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Impression
(2) Personnal
(3) Terrorism
(4) Illiterate

**91.** (1) Stupefaction
(2) Preferential
(3) Surveillence
(4) Detrimental

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. It has been the handmaid of the ruling class.
Q. Therefore, ever since the dawn of civilization , persons in power have always tried to supervise or control education.
R. Education is an instrument which imparts knowledge and therefore, indirectly controls power.
S. It is an old saying that knowledge is power.
(1) SQPR (2) PRQS
(3) SRQP (4) PSQR

**93.** P. This is despite the fact that there is a rampant migration of rural families to urban centres.
Q. Generally the gains of being a unit of the urban population are less than the disadvantages and risks that are inbuilt in the urban life.
R. Rural population still dominates the urban population as far as the number is considered.
S. India is a country of villages.
(1) QRSP (2) RPQS
(3) SRQP (4) QPRS

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**The residents celebrated Diwali.**
(1) Celebration of Diwali was done by the residents.
(2) Diwali has been celebrated by the residents.
(3) Diwali was celebrated by the residents.
(4) Diwali is celebrated by the residents.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**The foreman said to his workers "I cannot pay you higher wages."**
(1) The foreman warned his workers that he cannot pay them higher wages.
(2) The foreman told his workers that he could not pay them higher wages.
(3) The foreman told his workers that they could not be paid higher wages.
(4) The foreman forbid his workers to pay higher wages.

**Directions (96–100) :** In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

It is not **(96)** to ignore all allegations of booth capturing and rigging as murmurs of **(97)** losers. **(98)** have come to light of intimidation of whole villages and communities to make them vote for a particular candidate or party. At times election officials have been **(99)** by unscrupulous politicians into turning a blind eye to **(100)** practices.

**96.** (1) realistic
(2) reliable
(3) required
(4) essential

**97.** (1) rational
(2) disgruntled
(3) huge
(4) idealist

**98.** (1) instances
(2) sources
(3) reasons
(4) Ideas

**99.** (1) decided
(2) safeguarded
(3) rejuvenated
(4) threatened

**100.** (1) significant
(2) rare
(3) unjust
(4) usual

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (1) | **3.** (1) | **4.** (4) |
| **5.** (4) | **6.** (3) | **7.** (2) | **8.** (2) |
| **9.** (4) | **10.** (4) | **11.** (3) | **12.** (1) |
| **13.** (1) | **14.** (3) | **15.** (2) | **16.** (3) |
| **17.** (3) | **18.** (3) | **19.** (4) | **20.** (4) |
| **21.** (1) | **22.** (3) | **23.** (2) | **24.** (4) |
| **25.** (4) | **26.** (1) | **27.** (4) | **28.** (3) |
| **29.** (3) | **30.** (2) | **31.** (3) | **32.** (4) |
| **33.** (3) | **34.** (4) | **35.** (1) | **36.** (1) |
| **37.** (1) | **38.** (1) | **39.** (3) | **40.** (1) |
| **41.** (4) | **42.** (3) | **43.** (1) | **44.** (2) |
| **45.** (1) | **46.** (1) | **47.** (2) | **48.** (3) |
| **49.** (4) | **50.** (1) | **51.** (2) | **52.** (2) |
| **53.** (3) | **54.** (1) | **55.** (3) | **56.** (1) |
| **57.** (4) | **58.** (4) | **59.** (2) | **60.** (4) |
| **61.** (4) | **62.** (2) | **63.** (2) | **64.** (1) |
| **65.** (3) | **66.** (3) | **67.** (2) | **68.** (2) |
| **69.** (3) | **70.** (3) | **71.** (1) | **72.** (3) |
| **73.** (3) | **74.** (3) | **75.** (3) | **76.** (3) |
| **77.** (2) | **78.** (2) | **79.** (3) | **80.** (2) |
| **81.** (4) | **82.** (3) | **83.** (2) | **84.** (3) |
| **85.** (1) | **86.** (1) | **87.** (2) | **88.** (2) |
| **89.** (4) | **90.** (2) | **91.** (3) | **92.** (3) |
| **93.** (3) | **94.** (3) | **95.** (2) | **96.** (1) |
| **97.** (2) | **98.** (1) | **99.** (4) | **100.** (3) |

## EXPLANATIONS

**1.** (4) The game of hockey is played with stick and ball. Similarly, boxer wears gloves in boxing.

**2.** (1) $F \xrightarrow{+13} S$

$L \xrightarrow{+13} Y$

Similarly,

$I \xrightarrow{+13} V$

$G \xrightarrow{+13} T$

**3.** (1) $(19)^2 + 6 = 361 + 6 = 367$
Similarly,
$(21)^2 + 6 = 441 + 6 = 447$

**4.** (4) Marsh is an area of low land which is wet because water cannot drain away from it. Except Marsh, all others are water bodies.

**5.** (4) $A \xrightarrow{+9} J$

$E \xrightarrow{+9} N$

$N \xrightarrow{+9} W$

But, $P \xrightarrow{+7} W$

**6.** (3) Except the number 360, all other numbers are one more than the perfect squares of certain natural numbers.
$170 = 13 \times 13 + 1$
$290 = 17 \times 17 + 1$
$530 = 23 \times 23 + 1$
But, $360 = 19 \times 19 - 1$

**7.** (2) Arrangement of words as per dictionary :
(3) Effaceable
↓
(5) Effacement
↓
(4) Effacements
↓
(1) Effacers
↓
(2) Effacing

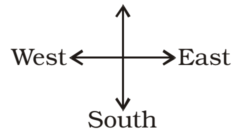
**8.** (2)

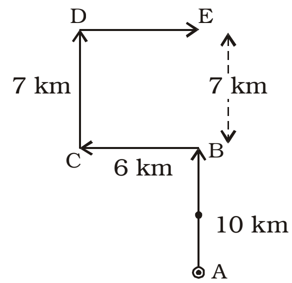
$C \xrightarrow{-7} V \xrightarrow{-7} O \xrightarrow{-7}$ **H**

$11 \xrightarrow{+6} 17 \xrightarrow{+6} 23 \xrightarrow{+6}$ **29**

**9.** (4) $19 + 26 = 45$
$26 + 45 = 71$
$45 + 71 = 116$
$71 + 116 = 187$

**10.** (4)




AE = AB + BE = (10 + 7) km.
= 17 km.

**11.** (3) In the English alphabet, 13th from right end = N.

**12.** (1) There is no 'T' letter in the given word. Therefore, the word HATS cannot be formed.

[H] A N D S [O M E] ⇒ HOME

H [A N] D S O [M E] ⇒ NAME

H [A N D S] O M E ⇒ SAND

**13.** (1)

| A | C | C | O | U | N | T |
|---|---|---|---|---|---|---|
| +3 ↓ | +3 ↓ | +3 ↓ | +3 ↓ | +3 ↓ | +3 ↓ | +3 ↓ |
| D | F | F | R | X | Q | W |

Therefore,

| M | A | T | H | S |
|---|---|---|---|---|
| +3 ↓ | +3 ↓ | +3 ↓ | +3 ↓ | +3 ↓ |
| P | D | W | K | V |

**14.** (3)

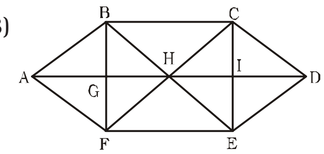
| – ⇒ ÷ | + ⇒ × |
|---|---|
| ÷ ⇒ + | × ⇒ – |

$11 \div 6 - 2 + 5 \times 3 = ?$
$\Rightarrow\ ? = 11 + 6 \div 2 \times 5 - 3$
$\Rightarrow\ ? = 11 + 3 \times 5 - 3$
$\Rightarrow\ ? = 11 + 15 - 3 = 23$

**15.** (2) $3 \# 6 * 9 = 36 + 9 = 45$
$9 \# 8 * 7 = 98 + 7 = 105$
Therefore,
$5 * 6 \# 3 = 5 + 63 = 68$

**16.** (3) First Row
$(7 \times 4 \times 8) - (3 \times 3 \times 6)$
$\Rightarrow 224 - 54 = 170$
Second Row
$(3 \times 4 \times 9) - (5 \times 2 \times 3)$
$\Rightarrow 108 - 30 = 78$
Third Row
$(3 \times 2 \times 8) - (4 \times 3 \times 1)$
$\Rightarrow 48 - 12 = 36$

**17.** (3)



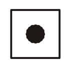
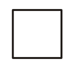

The triangles are :
ΔAGB; ΔAGF; ΔAFB; ΔHGB; ΔHGF; ΔHBF; ΔHCB; ΔHFE; ΔHIC; ΔHIE; ΔHEC; ΔCBF; ΔCEF; ΔECB; ΔDEFB; ΔDIC; ΔDIE; ΔDCE; ΔBAH; ΔFHA; ΔCHD; ΔEDH
Thus, there are 22 triangles in the given figure.

**18.** (3) First Premise is Universal Affirmative (A–type).
Second Premise is Universal Negative (E–type).

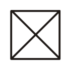
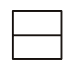
All bags are tables.
↙↗
No table is red.

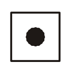
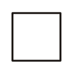
A + E ⇒ E–type of Conclusion
"No bag is red."
Neither Conclusion I or Conclusion II follows.

**19.** (4) After folding the figure :

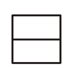
 lies opposite .

lies opposite .

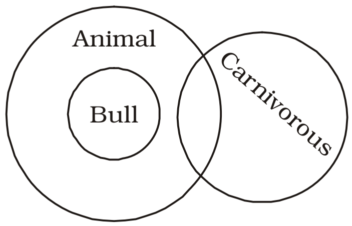
 lies opposite .

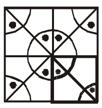
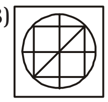
 cannot be on the face adjacent to . Therefore, option (1) may be ruled out.

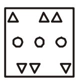
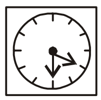
cannot be on the face adjacent to . Therefore, option (2) may be ruled out.

cannot be on the face adjacent to . Therefore, option (3) may be ruled out.

**20.** (4) Bull comes under the class animal. Bull is a herbivore. Some animals may be carnivorous.




**21.** (1)  **22.** (3) 

**23.** (2)  **24.** (4) 

**25.** (4) T = 01, 14, 20, 32, 43
R = 03, 11, 22, 30, 44
A = 56, 68, 75, 87, 99
I = 00, 13, 21, 34, 42
L = 57, 69, 76, 88, 95

| Option | T | R | A | I | L |
|---|---|---|---|---|---|
| (1) | 01 | 03 | 75 | 00 | ~~68~~ |
| (2) | 14 | 30 | 68 | 13 | ~~58~~ |
| (3) | 20 | 44 | 99 | 21 | ~~96~~ |
| (4) | 43 | 11 | 56 | 34 | 88 |

**26.** (1) Prime lending rate is the interest rate charged by banks to their largest, most secure, and most creditworthy customers on short-term loans. This rate is used as a guide for computing interest rates for other borrowers.

**27.** (4) Bank offers loans for different period :
- Short-term loans of up to one year
- Medium-term loans between one and three years
- Long-term loans of over three years

**28.** (3) The feature of the federal system is the distribution of power between the federal government and the government of the states. The Indian Constitution made a clear division of power into three lists—the Union list, the State list, the Concurrent list. The subjects included in the Union or Federal list can be controlled by the Union Government alone.

**29.** (3) Article 360 states that if the President is satisfied that a situation has arisen whereby the financial stability or the credit of India or any part thereof is threatened, President may declare a state of financial emergency. A proclamation issued under Article 360 will remain in force for two months unless before the expiry of the period it is approved by both the Houses of the Parliament.

**30.** (2) Lala Hardayal, Sohan Singh Bhakkna, and Taraknath Das were the founders of Gadar party founded in 1913 and it's headquarter was in San Francisco. Gadar is a Urdu word which means 'revolt' or 'rebellion'.

**31.** (3) On 31 December 1600, a group of merchants who had incorporated themselves into the East India Company were given monopoly privileges on all trade with the East Indies. The Company's ships first arrived in India, at the port of Surat, in 1608. Sir Thomas Roe reached the court of the Mughal Emperor, Jahangir, as the emissary of King James I in 1615, and gained for the British the right to establish a factory at Surat.

**32.** (4) Fold mountains are created where two or more of Earth's tectonic plates are pushed together. At these colliding, compressing boundaries, rocks and debris are wraped and folded into rocky outcrops, hills, mountains, and entire mountain ranges. The rugged, soaring heights of the Himalayas, Andes, and Alps are all active fold mountains.

**33.** (3) Norwesters or the Kalbaishakhi is a local rain fall and thunder storm which occurs in India and Bangladesh. Kalbaishakhi occurs, with increasing frequency, from March till monsoon establishes over North-East India. Sometimes it might be progressive derechos.

**34.** (4) Ultraviolet (UV) radiation is a type of energy produced by the sun and some artificial sources, such as solariums. The sun's ultraviolet (UV) radiation is the main cause of skin cancer. UV damage also causes sunburn, tanning, premature ageing and eye damage.

**35.** (1) The blue whale is the largest living mammal (and animal species) on this earth. In terms of size the blue whale can grow to lengths of over 90 ft. long and weigh more than 150 tons.

**36.** (1) Ribonucleic acid (RNA) is a single-stranded molecule that plays a vital role in coding, decoding, regulation and expression of genes. There are three major types of RNA, although there are more: transfer RNA (tRNA), messenger RNA (mRNA) and ribosomal RNA (rRNA). All of these perform different functions in the body.

**37.** (1) Weight of the body is the force with which it is attracted towards the center of the earth. As the distance of the pole is less than the distance of the equator from the center of the earth, the force of attraction is higher on the body at poles than at the equator. Hence the weight of a body is greater at pole than at the equator.

**38.** (1) Celsius is currently a derived unit for temperature in the SI system, Kelvin being the base unit. The abbreviation of Celsius is °C (degree Celsius) and the size of one Celsius degree is the same size as one kelvin. The unit and the actual Celsius scale was first presented by a Swede Andreas Celsius in 1742.

**39.** (3) Netscape Navigator was the first commercially successful Web browser. It was based off the Mosaic browser and was created by a team led by Marc Andreessen, a programmer who co-wrote the code for Mosaic. Netscape Navigator helped influence the development of the Web into a graphical user experience rather than a purely text-based one.

**40.** (1) Acidic and basic are two extremes that describe chemical property. The pH scale measures how acidic or basic a

substance is. The pH scale ranges from 0 to 14. A pH of 7 is neutral. A pH less than 7 is acidic. A pH greater than 7 is basic. Milk has a pH of around 6.5 to 6.7, which makes it slightly acidic.

**41.** (4) An emulsion is a colloid of two or more immiscible liquids where one liquid contains a dispersion of the other liquids. The milk fat is suspended in the water as fine droplets, which makes it an emulsion. The result of process of milk coagulation, or curdling, is a gelatinous material called curd.

**42.** (3) The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February, 2005. 184 Parties of the Convention have ratified its Protocol to date. It was the first international agreement in which many of the world's industrial nations concluded a verifiable agreement to reduce their emissions of six greenhouse gases in order to prevent global warming.

**43.** (1) NITI Aayog launched the schemes, Lucky Grahak Yojana and Digi-Dhan Vyapar Yojana for incentivising digital payment in December 2016. The primary aim of these schemes was to incentivize digital transactions so that electronic payments are adopted by all sections of the society, especially the poor and the middle class

**44.** (2) Robert Edwards, the British scientist who pioneered IVF, was responsible for the conception of Louise Brown, the world's first test-tube baby. The Nobel prize for physiology or medicine for 2010 has been awarded to him.

**45.** (1) Wimbledon is a district of Southwest London associated with the Wimbledon Tennis Championships . Wimbledon is one of the four Grand Slam tennis tournaments, the others being the Australian Open, the French Open and the US Open.

**46.** (1) Artist-Art
- Yamini Krishna Murthy-Bharatnatyam
- M.S.Subbulakshmi-Vocalist
- Vishnu Diganbar Paluskar-Musician
- Pt. Shivkumar Sharma-Santoor

**47.** (2) Lalita Babar is the recipient of Arjuna Award 2016 in the field of atheletics. She won gold at the Incheon games in South Korea in 2014

**48.** (3) Six Machine : I Don't Like Cricket...I Love is the title of Chris Gayle's autobiography. It is a racy narrative packed with anecdotes that Gayle reveals for the first time. He is a Jamaican cricketer well known for hitting sixes very often along with Shahid Afridi; in 2012 he became the first player to hit a six off the first ball of a Test match.

**49.** (4) Spain and the United Kingdom headed towards a confrontation over Gibraltar. The seizure of Gibraltar by a joint Dutch-British force in 1704 came as Britain took over from Spain as Europe's strongest imperial nation. Possession was sealed in the Treaty of Utrecht in 1713.

**50.** (1) In China, Facebook was blocked following the July 2009 Urumqi riots because Xinjiang independence activists were using Facebook as part of their communications network. The larger problem was that facebook didn't have the required licenses that websites require in China and didn't adhere to Government regulations regarding content filtering. However, it is not blocked in Hong Kong, Macau, and Taiwan.

**51.** (2) Let the fraction be $\frac{x}{y}$.

According to the question,

$$\frac{x+5}{y} = \frac{6}{5}$$

$\Rightarrow 5x + 25 = 6y$

$\Rightarrow 5x - 6y = -25$ ...(i)

Again,

$$\frac{x}{y+4} = \frac{1}{2}$$

$\Rightarrow 2x = y + 4$

$\Rightarrow 2x - y = 4$ ...(ii)

Equation (i) – (ii) × 6 gives,

$5x - 6y - 12x + 6y = -25 - 24$

$\Rightarrow -7x = -49 \Rightarrow x = \frac{-49}{-7} = 7$

From equation (ii),

$2 \times 7 - y = 4 \Rightarrow y = 14 - 4 = 10$

$\therefore$ Required fraction $= \frac{7}{10}$

OR

From option (2),

$$\frac{7+5}{10} = \frac{12}{10} = \frac{6}{5}$$

and $\frac{7}{10+4} = \frac{7}{14} = \frac{1}{2}$

**52.** (2) In 10 days Punit will do

$\frac{10}{20} = \frac{1}{2}$ part of work.

$\because$ Amit does 1 work in 25 days.

$\therefore$ Amit will do, $\frac{1}{2}$ work in

$\frac{25}{2} = 12\frac{1}{2}$ days

**53.** (3) $7x + 11x + 7x + 11x = 360°$

$36x = 360° \Rightarrow x = 10°$

Angles of quadrilatral 70°, 110°, 70°, 110°

Hence, it is parallelogram because the opposite angles of a parallelogram are equal or sum of adjacent angles is 180°.

**54.** (1) Discount = Rs. (2150 – 1892) = Rs. 258

If discount = $x$% then

$$\frac{2150 \times x}{100} \Rightarrow 258$$

$\Rightarrow x = \frac{25800}{2150} = 12\%$

**55.** (3) According to the question,

$a = \frac{2}{9}$ of $(b + c) \Rightarrow b + c = \frac{9a}{2}$

and $b = \frac{3}{7}$ of $(a + c)$

$\Rightarrow a + c = \frac{7b}{3}$

$\therefore b + c - a - c = \frac{9a}{2} - \frac{7b}{3}$

$\Rightarrow b - a = \frac{27a - 14b}{6}$

$\Rightarrow 6b - 6a = 27a - 14b$

$\Rightarrow 33a = 20b$

$\Rightarrow a : b = \frac{20}{33}$

$\therefore\ b + c = \frac{9a}{2} = \frac{9}{2} \times \frac{20b}{33}$

$= \frac{30b}{11}$

$\Rightarrow c = \frac{19b}{11}$

$\Rightarrow b : c = 11 : 19 = 33 : 57$

$\therefore\ a : b : c = 20 : 33 : 57$

Share of C = $c$

$= \frac{57}{20+33+57} \times 60{,}500$

= Rs. 31350

OR

According to the question,

$a + b + c = 60500$ ...(i)

Again, $a = \frac{2}{9}(b + c)$

$\therefore\ b + c = \frac{9a}{2}$

From equation (i)

$a + \frac{9a}{2} = 60500$

$\Rightarrow \frac{11a}{2} = 60500$

$\Rightarrow a = \frac{60500 \times 2}{11} = 11000$

Again, $b = \frac{3}{7}(a + c)$

$\Rightarrow a + c = \frac{7b}{3}$

From equation (i),

$b + \frac{7b}{3} = 60500$

$\Rightarrow \frac{10b}{3} = 60500$

$\Rightarrow b = 6050 \times 3 = 18150$

$\therefore$ C's share = $c$

= Rs. (60500 – 11000 – 18150)

= Rs. 31350

**56.** (1) Total age of 6 girls

= $6x$ years

New average age of class

$= \frac{6x + x - 2 + x + 2 + x + 4 + x + 6}{10}$

$= \frac{10x + 10}{10} = \frac{10(x+1)}{10}$

$= (x + 1)$ years

**57.** (4) Selling prices of both machines are equal. In this case there is always loss.

Required Loss %

$= \left(\frac{x^2}{100}\right)\% = \left(\frac{32 \times 32}{100}\right)\%$

= 10.24%

**58.** (4) Quantity of milk in 80 litres of mixture $= \frac{80 \times 10}{100}$

= 8 litres

Let $x$ litres of water be added.

$\therefore\ (80 + x) \times \frac{5}{100} = 8$

$\Rightarrow 80 + x = 160$

$\Rightarrow x = 160 - 80 = 80$ litres

**59.** (2) Let the usual speed of bus be $x$ kmph.

$\therefore$ Usual time $= \frac{200}{x}$ hours ...(i)

When bus covers 80 km. at usual speed and that of 120 km. at $\frac{6x}{7}$ kmph, extra time taken = 50 minutes.

$\therefore\ \frac{80}{x} + \frac{120}{\frac{6x}{7}} = \frac{200}{x} + \frac{50}{60}$

$\Rightarrow \frac{80}{x} + \frac{140}{x} - \frac{200}{x} = \frac{5}{6}$

$\Rightarrow \frac{80 + 140 - 200}{x} = \frac{5}{6}$

$\Rightarrow \frac{20}{x} = \frac{5}{6}$

$\Rightarrow x = \frac{20 \times 6}{5} = 24$ kmph.

**60.** (4) Principal $= \frac{\text{S.I.} \times 100}{t \times r}$

$= \frac{25920 \times 100}{6 \times 12}$ = Rs. 36000

$A = P\left(1 + \frac{r}{100}\right)^n$

$= 36000\left(1 + \frac{8}{100}\right)^2$

$= 36000 \times \frac{108}{100} \times \frac{108}{100}$

= Rs. 41990.4

$\therefore$ C.I. = A – P

= 41990.4 – 36000 = Rs. 5990.4

**61.** (4) $3x^2 - 13x + 14 = 0$

$\alpha, \beta$ are roots of equation.

$\therefore\ \alpha + \beta = \frac{-b}{a} = \frac{-(-13)}{3} = \frac{13}{3}$;

$\alpha\beta = \frac{c}{a} = \frac{14}{3}$

$\therefore\ \frac{\alpha}{\beta} + \frac{\beta}{\alpha} = \frac{\alpha^2 + \beta^2}{\alpha b}$

$= \frac{(\alpha + \beta)^2 - 2\alpha\beta}{\alpha\beta} = \frac{\left(\frac{13}{3}\right)^2 - 2 \times \frac{14}{3}}{\frac{14}{3}}$

$= \frac{\frac{169}{9} - \frac{28}{3}}{\frac{14}{3}} = \frac{\frac{169 - 84}{9}}{\frac{14}{3}}$

$= \frac{85}{9} \times \frac{3}{14} = \frac{85}{42}$

**62.** (2) $a + b + c = 9$; $ab + bc + ca = 18$

$a^3 + b^3 + c^3 - 3abc = ?$

$a^3 + b^3 + c^3 - 3abc$

$= (a + b + c)[(a + b + c)^2 - 3(ab + bc + ca)]$

$= (9)[(9)^2 - 3 \times 18]$

$= 9 \times [81 - 54] = 9 \times 27 = 243$

**63.** (2) $\frac{x}{y} + \frac{y}{x} = 1$

$\Rightarrow \frac{x^2 + y^2}{xy} = 1$

$\Rightarrow x^2 + y^2 - xy = 0$

$\therefore\ x^3 + y^3 = (x + y)(x^2 + y^2 - xy)$

$= (x + y)(0) = 0$

**64.** (1) $\frac{xy + yz + xz}{xyz}$

$= \frac{xy}{xyz} + \frac{yz}{xyz} + \frac{xz}{xyz}$

$= \frac{1}{z} + \frac{1}{x} + \frac{1}{y}$

Now,

$5^x = 30^{-y} = 6^z = k$

$\Rightarrow 5 = k^{\frac{1}{x}}$; $30 = k^{\frac{-1}{y}}$; $6 = k^{\frac{1}{z}}$

$\therefore\ 6 \times 5 = 30$

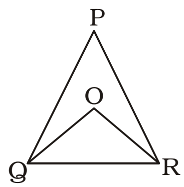
$\Rightarrow k^{\frac{1}{z}} \times k^{\frac{1}{x}} = k^{\frac{-1}{y}}$

$\Rightarrow k^{\frac{1}{z}+\frac{1}{x}} = k^{\frac{-1}{y}}$

$\Rightarrow \frac{1}{z} + \frac{1}{x} = \frac{-1}{y}$

$\Rightarrow \frac{1}{x} + \frac{1}{z} + \frac{1}{y} = 0$

**65.** (3)




$\angle P = 70°$

$\therefore \angle QOP = 90° + \frac{\angle p}{2}$

$= 90° + \frac{70°}{2} = 90° + 35° = 125°$

**66.** (3) The ratio of area of two similar triangles = 5 : 7

Ratio of corresponding sides of triangles

$= \sqrt{\frac{5}{7}} = \sqrt{5} : \sqrt{7}$

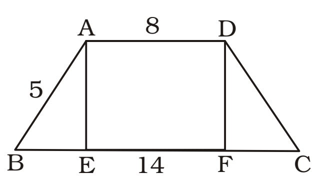
**67.** (2) AE ⊥ BC;

DF ⊥ BC

$\therefore$ BE = FC = 3 cm.

$AE = \sqrt{5^2 - 3^2}$

$= \sqrt{25-9} = \sqrt{16} = 4$ cm.

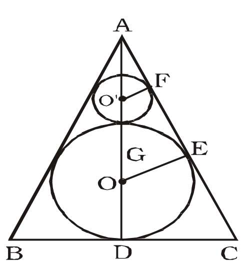



Area of trapezium $= \frac{1}{2} \times$ height × sum of parallel sides

$= \frac{1}{2} \times 4 \times (8 + 14)$

$= 2 \times 22 = 44\ cm^2$

**68.** (2)




OE = R

$\therefore \pi R^2 = 1386 \Rightarrow \frac{22}{7} R^2 = 1386$

$\Rightarrow R^2 = \frac{1386 \times 7}{22} = 441$

$\Rightarrow R = \sqrt{441} = 21$ cm.

$\therefore$ OQ = 2R = 42 cm.

ΔAFO' ~ ΔAEO

O'F ⊥ AF

$\therefore$ In ΔAO'F,

$\sin 30° = \frac{O'F}{AO'} \Rightarrow \frac{1}{2} = \frac{r}{AO'}$

$\Rightarrow AO' = 2r$

$\therefore OA = 42 \Rightarrow 2r + r + R = 42$

$\Rightarrow 3r = 21 \Rightarrow r = 7$ cm.

$\therefore$ Area of smaller circle $= \pi r^2$

$= \frac{22}{7} \times 7 \times 7 = 154$ sq. cm.

**69.** (3) $\frac{\tan^2\theta - \sin^2\theta}{\tan^2\theta \sin^2\theta}$

$= \frac{\tan^2\theta}{\tan^2\theta\sin^2\theta} - \frac{\sin^2\theta}{\tan^2\theta\sin^2\theta}$

$= \frac{1}{\sin^2\theta} - \frac{1}{\tan^2\theta}$

$= \text{cosec}^2\theta - \cot^2\theta = 1$

**70.** (3) sec (3x – 20°)

= cosec (3y + 20°)

$\Rightarrow$ sec (3x – 20°)

= sec [90° – (3y + 20°)]

$\Rightarrow 3x - 20 = 90° - 3y - 20°$

$\Rightarrow 3x + 3y = 70° + 20° = 90°$

$\Rightarrow x + y = \frac{90°}{3} = 30°$

$\therefore \tan(x + y) = \tan 30° = \frac{1}{\sqrt{3}}$

**71.** (1) $\cot A = \frac{n}{n+1}$;

$\cot B = \frac{1}{2n+1}$

$\cot(A + B) = \frac{\cot A \cot B - 1}{\cot B + \cot A}$

$= \frac{\frac{n}{n+1} \times \frac{1}{2n+1} - 1}{\frac{1}{2n+1} + \frac{n}{n+1}}$

$= \frac{n-(n+1)(2n+1)}{n+1+n(2n+1)}$

$= \frac{n-(2n^2+n+2n+1)}{n+1+2n^2+n}$

$= \frac{-2n^2-2n-1}{2n^2+2n+1} = \frac{-(2n^2+2n+1)}{2n^2+2n+1}$

$= -1$

**72.** (3) There is highest increase in sales of SUV cars from 2009 to 2012. It is obvious from the graph.

Percentage increase

$= \frac{600}{150} \times 100 = 400\%$

**73.** (3) Annual growth rate

$= \frac{600 \times 100}{150 \times 3} = 133.33\%$

**74.** (3)

$\frac{\text{Total sales of Sedan in 4 years}}{\text{Total sales of SUV in 4 years}}$

$= \frac{450+500+575+625}{150+250+400+750}$

$= \frac{2150}{1550} = \frac{215}{155} = \frac{43}{31}$

= 43 : 31

**75.** (3) Percentage increase in 2012 :

Hatch back $\Rightarrow \frac{800-650}{650} \times 100$

$= \frac{1500}{65} \approx 23$

Sedan $\Rightarrow \frac{625-575}{575} \times 100$

$= \frac{500}{575} \approx 9\%$

SUV $\Rightarrow \frac{750-400}{400} \times 100$

$= \frac{350}{4} = 87.5\%$

Required answer

$= \left(\frac{800 \times 123}{100} + \frac{625 \times 109}{100} + \frac{750 \times 187.5}{100}\right)$ thousands

= (984 + 681 + 1406) thousands

≈ 3071 thousands

**76.** (3) **die of** = a disease

**die from** = a car/road accident

**Look at the sentences :**

Ramesh died of cancer.

Many people die from road accidents every year.

So, correct expression : died from an accident

**77.** (2) 'Because' **itself means** 'for the reason that'. So, it is never used with the phrase 'the reason that' or 'the reason why'.

So, correct expression : The reason for his failure is that he didn't study at all.

**78.** (2) **Add a Feather to one's cap (idiomatic expression)** = to gain success, achievement and accomplishment.

**79.** (3) **Persuasion (Noun)** = the act of convincing.

**Manipulation (Noun)** = the act of controlling someone/something to your own advantage, often unfairly or dishonestly.

**80.** (2) **Pernicious/dangerous (Adjective)** = harmful; damaging.

**Look at the sentence :**

The pernicious influences of the mass media.

**Beneficial/advantageous (Adjective)** = favourable; helpful; useful.

**Innocuous (Adjective)** = harmless; safe.

**81.** (4) **Stringent/rigorous (Adjective)** = strict; firm; rigid.

**Look at the sentence :**

Stringent laws can work wonders.

**Annoying (Adjective)** = irritating; infuriating.

**Revengeful (Adjective)** = eager for revenge.

**Incidental (Adjective)** = secondary; subsidiary; ancillary.

**82.** (3) **Vexatious (Adjective)** = annoying; vexing.

**Look at the sentence :**

The vexatious question posed by software copyrights.

**Soothing (Adjective)** = having a gently calming effect.

**Look at the sentence :**

She put on some soothing music.

**Pliable (Adjective)** = flexible; easily bent.

**Treachery (Noun)** = betrayal; disloyalty.

**Calamitous (Adjective)** = disastrous; devastating.

**83.** (2) **Amplify/burgeon (Verb)** = grow rapidly; increase rapidly.

**Look at the sentence :**

Manufacturers cash in on the burgeoning demand.

**Shrivel (Verb)** = wrinkle; wither; shrink.

**Look at the sentence :**

The flowers simply shrivelled up.

**Bolster (Verb)** = strengthen, support.

**Mount (Verb)** = climb up (stairs a hill or other rising surface).

**84.** (3) **to have enough money to live on and nothing extra**

**Look at the sentence :**

He belongs to an ordinary family. He lives from hand to month.

**85.** (1) **to bear the consequences**

**Look at the sentence :**

Ramesh did not do his homework and so, he faced the music.

**86.** (1) One event was followed by the other. The earlier event will be expressed in Past Perfect.

**Look at the sentences :**

The patient had died before the doctor reached.

The train had left before we reached the station.

**87.** (2) **Hardly (Adverb)** = scarcely; little

'Hardly' conveys a negative meaning.

In other words, it is a negative word.

Hence, hardly anything will be used.

**88.** (2) **Infanticide (Noun)** = killing of an infant.

**Foeticide (Noun)** = destruction of a foetus.

**Lupicide (Noun)** = killing of a wolf or wolves.

**89.** (4) **Oenophile (Noun)** = a lover of wines.

**Technophile (Noun)** = a lover of new technology.

**Romanophile (Noun)** = a lover of Ancient Rome.

**90.** (2) Correct spelling is : personnel

**91.** (3) Correct spelling is : surveillance = close observation

**94.** (3) Diwali was celebrated by the residents.

It is active voice of simple past tense. Its passive voice is formed as follows :

Subject + was/were + $V_3$ + by + object

**95.** (2) The foreman told his workers that he could not pay them higher wages.

It is direct speech of an assertive sentence which consists of a modal verb. Its indirect speech is formed as follows :

⇒ 'said to' changes to 'told'.

⇒ 'can' changes to 'could'.

⇒ connector 'that' is used

⇒ pronoun 'you' changes to 'them' as per $\frac{\text{SON}}{1\ 2\ 3}$

**96.** (1) **Realistic (Adjective)** = sensible; commonsensical.

**Reliable (Adjective)** = trustworthy.

**Essential/required (Adjective)** = compulsory; desired.

**97.** (2) **Disgruntled (Adjective)** = dissatisfied; resentful.

**Rational (Adjective)** = logical; sensible.

**Huge (Adjective)** = large; mammoth.

**Idealist (Noun)** = visionary; wishful thinker.

**98.** (1) **Instance (Noun)** = example; occasion; case; occurrence.

**Sources (Noun)** = places of origin; starting points.

**Reasons (Noun)** = causes; purposes.

**Ideas (Noun)** = plans; designs.

**99.** (4) **Threaten (Verb)** = intimidate; pressurize.

**Safeguard (Verb)** = protect; defend.

**Rejuvenate (Verb)** = revive; revitalize; restore.

**Decide (Verb)** = resolve; determine; reach a conclusion.

**100.** (3) **Unjust (Adjective)** = biased; unfair; wrongful; wrong.

**Significant (Adjective)** = important; crucial.

**Rare (Adjective)** = few and far between; infrequent.

**Usual (Adjective)** = habitual; customary; accustomed.

❑❑❑

S E T **15**

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 11.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Ampere : Electric Current :: Fathom : ?
(1) Depth of Water
(2) Frequency
(3) Sound level
(4) Work or Energy

**2.** In the following question, select the related number from the given alternatives :
AKP : 1121256 :: LNO : ?
(1) 196125144
(2) 144196225
(3) 144225196
(4) 41521196

**3.** In the following question, select the related number pair from the given alternatives :
534 : 2 : : ? : ?
(1) 102 : 9 (2) 553 : 6
(3) 884 : 2 (4) 999 : 2

**4.** In the following question, select the odd word from the given alternatives :
(1) Baseball
(2) Football
(3) Hockey
(4) Snooker

**5.** In the following question, select the odd letters from the given alternatives:
(1) BOH (2) ERK
(3) HUO (4) KXQ

**6.** In the following question, select the odd number from the given alternatives :
(1) 145 (2) 463
(3) 581 (4) 651

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Clocklipe
2. Cloddier
3. Clodpates
4. Clodpolls
5. Clockwise
(1) 15234 (2) 23154
(3) 24315 (4) 51234

**8.** In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
*efg _ _ eff _ ghhe _ eff _ gggh _ h*
(1) *eghhfe* (2) *ghhhh*
(3) *hegefh* (4) *hgefhe*

**9.** In the following question, select the missing number from the given series :
5, 13, 40, 104, ?
(1) 229 (2) 239
(3) 259 (4) 269

**10.** The ratio of the present ages of Aman and Ankit is 2 : 1 and the sum of their present ages is 72 years. What will be the Aman's age (in years) after 6 years?
(1) 30 (2) 48
(3) 52 (4) 54

**11.** There are five girls–R, S, T, P and Q sitting in a row facing north. T is sitting exactly in the middle of the row. Q is sitting to the immediate right and immediate left of P and T respectively. S is not sitting at the extreme end. Who is sitting third to the left of R?
(1) P (2) Q
(3) S (4) T

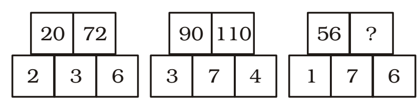
**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**ERADICATE**
(1) AREA (2) CARE
(3) DICE (4) TASTE

**13.** In a certain coded language, 'hit ka tom' is written as 'tie the shoes', 'ka lo fod' is written as 'shoes of leather' and 'lo tin lot' is written as 'leather and raxin'. How is 'of ' written in this code language?
(1) fod (2) ka
(3) lo or fod (4) tin

**14.** If "–" means "added to", "+" means "divided by", "÷" means "multiplied by", "×" means "subtracted from", then
13 + 12 × 9 ÷ 3 – 6 = ?
(1) $\frac{-117}{11}$ (2) $\frac{117}{11}$
(3) $\frac{-237}{12}$ (4) $\frac{-239}{12}$

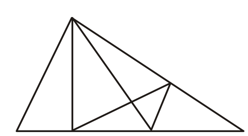
**15.** If 6 @ 4 @ 7 = 101 and 2 @ 5 @ 11 = 150, then what is the value of A in A @ 8 @ 9 = 289?
(1) 5 (2) 8
(3) 12 (4) 17

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives :




(1) 112 (2) 144
(3) 156 (4) 186

**17.** How many triangles are there in the given figure?



(1) 13 (2) 14
(3) 15 (4) 16

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows from the given statements.

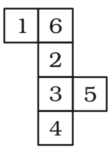
**Statements :**
I. Some banks are private.
II. All private are industry.

**Conclusions :**
I. Some banks are industry.
II. All banks are industry.

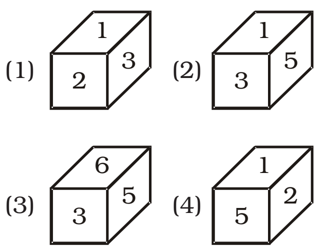
(1) Only Conclusion I follows.
(2) Only Conclusion II follows.
(3) Neither Conclusion I nor Conclusion II follows.
(4) Both Conclusions follow.

**19.** From the given options, which figure can be formed by folding the figure given in the question?

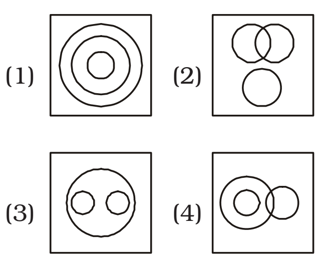
**Question Figure :**



**Answer Figures :**

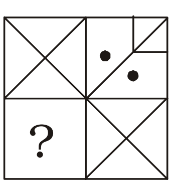


**20.** Identify the diagram that best represents the relationship among the given classes.
Animal, Leopard, Lion

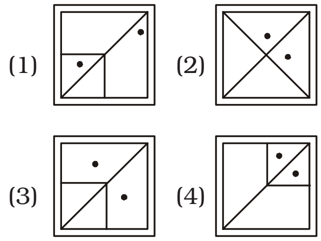


**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

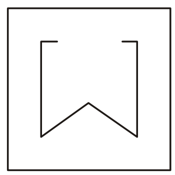


**Answer Figures :**

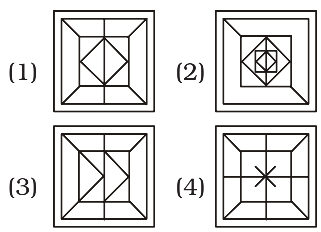


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

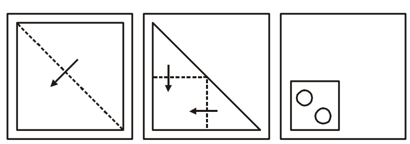


**Answer Figures :**

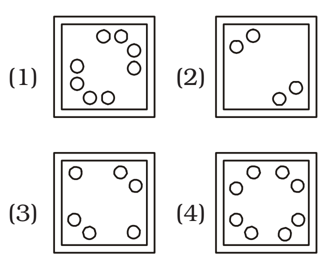


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened ?

**Question Figures :**

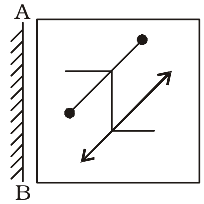


**Answer Figures :**

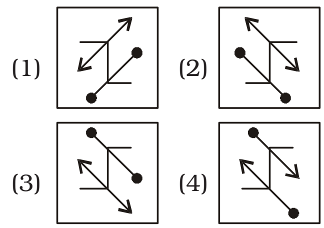


**24.** If a mirror is placed on the line AB, then which of the answer figure is the right image of the given figure ?

**Question Figure :**



**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of **Martix–I** are numbered from 0 to 4 and that of **Matrix–II** are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'F' can be represented by 03, 34 etc., and 'A' can be represented by 31, 43, etc. Similarly, you have to identify the set for the word "**RATES**".

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | A | G | R | F | E |
| 1 | F | E | A | G | R |
| 2 | G | R | F | E | A |
| 3 | E | A | G | R | F |
| 4 | R | F | E | A | G |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | T | P | U | S | O |
| 6 | S | O | T | P | U |
| 7 | P | U | S | O | T |
| 8 | O | T | P | U | S |
| 9 | U | S | O | T | P |

(1) 33, 00, 98, 30, 88
(2) 14, 43, 55, 11, 68
(3) 21, 24, 86, 42, 56
(4) 02, 12, 67, 04, 96

## GENERAL AWARENESS

**26.** Courier service comes under which sector?
(1) Primary
(2) Secondary
(3) Tertiary
(4) Both Secondary and Tertiary

**27.** Which among the following is not a direct tax?
(1) Income tax
(2) Wealth tax
(3) Corporate tax
(4) None of these

**28.** Which of the following is justiciable in nature?
(1) Fundamental Duties
(2) Directive Principles of State Policy
(3) Fundamental Rights
(4) None of these

**29.** Which of the following Amendments is also known as the 'Mini Constitution' of India?
(1) 7th Amendment
(2) 42nd Amendment
(3) 44th Amendment
(4) 74th Amendment

**30.** Match the following :

| Column–I | Column–II |
|---|---|
| 1. Brihadeswara Temple | a. Odisha |
| 2. Dilwara Temple | b. Tamil Nadu |
| 3. Lingraja Temple | c. Karnataka |
| 4. Hampi Group Monuments | d. Rajasthan |

(1) 1– c, 2–d, 3–a, 4–b
(2) 1–a, 2–c, 3–d, 4–b
(3) 1–b, 2–d, 3–a, 4–c
(4) 1–b, 2–a, 3–d, 4–c

**31.** In which battle was Siraj ud–Daulah defeated by Lord Clive?
(1) Battle of Plassey
(2) Battle of Buxer
(3) Battle of Panipat
(4) Battle of Haldighati

**32.** Alps mountain range is located in which continent?
(1) Europe
(2) North America
(3) South America
(4) Africa

**33.** What is the full form of ITCZ?
(1) Inter tropical converter zone
(2) Inter tropical convergence zone
(3) Inter tropical centre zone
(4) None of these

**34.** Which among the following does not have a cell wall?
(1) Euglena
(2) Paramecium
(3) Gonyaulax
(4) Mycoplasma

**35.** Which among the following is also called as 'power house of the cell'?
(1) Plastids
(2) Mitochondria
(3) Golgi bodies
(4) Cell wall

**36.** What is the role of Pneumatophores?
(1) Protect plant from animals
(2) Get oxygen for respiration
(3) Supports plant in standing upright
(4) Helps plant for pollination

**37.** Which among the following determines the pitch of a sound?
(1) Amplitude
(2) Frequency
(3) Loudness
(4) Wavelength

**38.** Which phenomena shows the particle nature of light?
(1) Diffraction
(2) Interference
(3) Photoelectric effect
(4) Polarisation

**39.** Who is called as 'Father of Modern Computer'?
(1) Alexander Fleming
(2) Bill Gates
(3) Michael Faraday
(4) Charles Babbage

**40.** What is the common name of $CaOCl_2$?
(1) Baking Powder
(2) Baking Soda
(3) Bleaching Powder
(4) Washing Soda

**41.** What is the common characteristic of the elements of the same group in the periodic table?
(1) Electrons in outer most shell
(2) Total number of electrons
(3) Total number of protons
(4) Atomic weight

**42.** Which disease is caused by Nickel?
(1) Itai Itai
(2) Dermatitis
(3) Learning disability
(4) Asthma

**43.** When was 'Pregnancy Aid Scheme' launched to help pregnant women financially with Rs. 6000?
(1) 1 December, 2016
(2) 19 December, 2016
(3) 31 December, 2016
(4) 1 January, 2017

**44.** Who pioneered diagnostic ultrasound?
(1) Alexander Fleming
(2) Ian Donald
(3) A. Laveran
(4) Robert Koch

**45.** Which of the following pair is CORRECT?
I. Summer Olympics 2020 - Tokyo
II. Summer Olympics 2016 - Rio de Janeiro
III. Summer Olympics 2012 - London
(1) Only I and II
(2) Only I and III
(3) Only II and III
(4) All are correct

**46.** Prime Minister of which country attended the recently organised river festival 'Namami Brahmaputra' in India?
(1) Bhutan (2) China
(3) Nepal (4) Bangladesh

**47.** Who among the following has been awarded the 'Rajiv Gandhi Khel Ratna Award' for the year 2016?
(1) Jitu Rai
(2) Sania Mirza
(3) Rohit Sharma
(4) Babita Kumari

**48.** Who is the author of the book 'Akhada: The Authorized Biography of Mahavir Singh Phogat'?
(1) Rabi Thapa
(2) Saurabh Duggal
(3) Salman Rushdie
(4) Tana French

**49.** With which Australian University Indian Railways has signed an agreement for Dedicated Freight Corridor?
(1) Monash University
(2) Victoria University
(3) University of Canberra
(4) University of Sydney

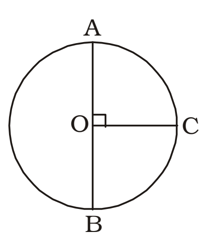
**50.** With which neighbouring country of India, Kaladan multi-model transport project has been undertaken?
(1) China (2) Nepal
(3) Bhutan (4) Myanmar

## QUANTITATIVE APTITUDE

**51.** If the square of sum of three positive consecutive natural numbers exceeds the sum of their squares by 292, then what is the largest of the three numbers?
(1) 5 (2) 6
(3) 7 (4) 8

**52.** A can do a piece of work in 6 days working 8 hours a day while B can do the same work in 4 days working 10 hours a day. If the work has to be completed in 5 days, so how many hours do they need to work together in a day?
(1) 4 (2) $5\frac{4}{11}$
(3) $6\frac{4}{11}$ (4) $4\frac{4}{11}$

**53.** In the given figure, the length of arc BC of the given circle is 44 cm. If O is the centre of circle, then what is the radius (in cm) of the circle ?




(1) 7 (2) 14
(3) 28 (4) 35

**54.** A shopkeeper allows 25% discount on the marked price of an article and he suffered a loss of 15%. What will be the profit per cent if the article is sold at marked price?
(1) 11.76 (2) 12.12
(3) 13.33 (4) 14.28

**55.** Three boxes of capacity 24 kg, 36 kg and 84 kg are completely filled with three varieties of wheat A, B and C respectively. All the three boxes were emptied and the three types of wheat were thoroughly mixed and the mixture was put back in the three boxes. How many kg of type A wheat would be there in the third box (in kg)?
(1) 10 (2) 12
(3) 14 (4) 16

**56.** A group of boys has an average weight of 36 kg. One boy weighing 42 kg leaves the group and another boy weighing 30 kg joins the group. If the average now becomes 35.7 kg, then how many boys are there in the group?
(1) 30 (2) 32
(3) 40 (4) 56

**57.** A man gains 15% by selling a calculator for a certain price. If he sells it at the triple the price, then what will be the profit percentage?
(1) 125 (2) 175
(3) 225 (4) 245

**58.** In an election between two candidates, the winning candidate has got 70% of the votes polled and has won by 15400 votes. What is the number of votes polled for loosing candidate?
(1) 38500 (2) 11550
(3) 26950 (4) 13550

**59.** A boat goes 4 km upstream and 4 km downstream in 1 hour. The same boat goes 5 km downstream and 3 km upstream in 55 minutes. What is the speed (in km/hr) of boat in still water?
(1) 6.5 (2) 7.75
(3) 9 (4) 10.5

**60.** Simple Interest received by a person in 10 years on a principal of Rs. 9500 is 130% of the principal. What is the rate of interest (in %) per annum?
(1) 12 (2) 13
(3) 15 (4) 19

**61.** For what value of $k$, the expression $x^6 - 18x^3 + k$ will be a perfect square?
(1) – 9 (2) – 81
(3) + 9 (4) + 81

**62.** If $\frac{\sqrt{5+x}+\sqrt{5-x}}{\sqrt{5+x}-\sqrt{5-x}} = 3$, then what is the value of $x$ ?
(1) $\frac{5}{2}$ (2) $\frac{25}{3}$
(3) 4 (4) 3

**63.** If $(x + y + z) = 12$, $xy + yz + zx = 44$ and $xyz = 48$, then what is the value of $x^3 + y^3 + z^3$?
(1) 104 (2) 144
(3) 196 (4) 288

**64.** If $x = \frac{4\sqrt{ab}}{\sqrt{a}+\sqrt{b}}$, then what is the value of $\frac{x+2\sqrt{a}}{x-2\sqrt{a}} + \frac{x+2\sqrt{b}}{x-2\sqrt{b}}$ (when $a \neq b$) ?
(1) 0 (2) 2
(3) 4 (4) $\frac{(\sqrt{a}+\sqrt{b})}{(\sqrt{a}-\sqrt{b})}$

**65.** In a triangle PQR, ∠Q = 90°. If PQ = 12 cm and QR = 5 cm, then what is the radius (in cm.) of the circumcircle of the triangle?
(1) 5 (2) 6
(3) 6.5 (4) $6\sqrt{2}$

**66.** If a chord of a circle subtends an angle of 30° at the circumference of the circle, then what is the ratio of the radius of the circle and the length of the chord respectively?
(1) 1 : 1 (2) 2 : 1
(3) 3 : 1 (4) $\sqrt{2}$ : 1

**67.** The tangents drawn at points A and B of a circle with centre O, meet at P. If ∠AOB = 120° and AP = 6 cm, then what is the area of triangle APB (in cm.$^2$) ?
(1) $6\sqrt{3}$ (2) $8\sqrt{3}$
(3) 9 (4) $9\sqrt{3}$

**68.** P is a point outside the circle at a distance of 6.5 cm from centre O of the circle. PR be a secant such that it intersects the circle at Q and R. If PQ = 4.5 cm and QR = 3.5 cm, then what is the radius (in cm) of the circle?
(1) 1.5 (2) 2
(3) 2.5 (4) 3

**69.** What is the value of

$$\left[\frac{1}{(1-\tan\theta)}\right]-\left[\frac{1}{(1+\tan\theta)}\right]?$$

(1) $\tan\theta$
(2) $\cot 2\theta$
(3) $\tan 2\theta$
(4) $\cot\theta$

**70.** If $\tan\theta + \cot\theta = x$, then what is the value of $\tan^4\theta + \cot^4\theta$?
(1) $(x^3 - 3)^2 + 2$
(2) $(x^4 - 2x) + 4$
(3) $x(x - 4) + 2$
(4) $x^2(x^2 - 4) + 2$

**71.** If $\tan^2\theta + \cot^2\theta = 2$, then what is the value of $2^{\sec\theta\,\mathrm{cosec}\theta}$?
(1) 0 (2) 1
(3) 2 (4) 4

**Directions (72–75) :** The table given below represents the amount of education loan (in Rs. crores) disbursed by 5 banks of a country over 5 years.

**Amount of education loan disbursed (in Rs. crores)**

| Year | Bank 1 | Bank 2 | Bank 3 | Bank 4 | Bank 5 |
|---|---|---|---|---|---|
| 2010 | 265 | 65 | 138 | 109 | 80 |
| 2011 | 295 | 118 | 165 | 123 | 103 |
| 2012 | 317 | 85 | 195 | 125 | 140 |
| 2013 | 323 | 103 | 178 | 142 | 143 |
| 2014 | 352 | 122 | 211 | 157 | 158 |

**72.** What is the percentage increase in education loan disbursed by Bank 2 from 2010 to 2014?
(1) 85.42 (2) 87.69
(3) 89.21 (4) 83.18

**73.** Which banks show a continuous trend of increase/decrease in loan amount disbursed over 5 years?
(1) Bank 1 and Bank 4
(2) Bank 1, Bank 4 and Bank 3
(3) Bank 1, Bank 4 and Bank 5
(4) Bank 4 and Bank 5

**74.** What can be said about the two following ratios?
I. Loan amount disbursed by Bank 1 in 2011/ Loan amount disbursed by Bank 2 in 2014
II. Loan amount disbursed by Bank 3 in 2014/ Loan amount disbursed by Bank 4 in 2011
(1) I > II (2) I < II
(3) I = II (4) No relation

**75.** Which of the following is the correct order of percentage increase in loan amount disbursed by the given banks from 2010 to 2014?
(1) Bank 3 > Bank 5 > Bank 2 > Bank 1 > Bank 4
(2) Bank 2 > Bank 3 > Bank 5 > Bank 1 > Bank 4
(3) Bank 5 > Bank 2 > Bank 3 > Bank 4 > Bank 1
(4) Bank 2 > Bank 5 > Bank 4 > Bank 3 > Bank 1

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** Ritika decided to get up early (1)/to wear a nice dress (2)/ and visit her aunt. (3)/ No Error (4)

**77.** The student asked me if (1)/I knew that Kalidas was the greater (2)/than any other poet. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** It is mainly due to Peter's lethargy that the plan fell _____.
(1) off (2) through
(3) in (4) out

**79.** Mother shall return _____ an hour.
(1) in (2) after
(3) during (4) within

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Surreptitious**
(1) Hesitation
(2) Secret
(3) Impious
(4) Artless

**81. Inanition**
(1) Lethargy (2) Offensive
(3) Vaccilating
(4) Grasping

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Imbroglio**
(1) Misery
(2) Censure
(3) Composure
(4) Dilemma

**83. Bequest**
(1) Accord (2) Damage
(3) Complex (4) Withdraw

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

**84. Adam's ale**
(1) Gift (2) Food
(3) Water (4) Belongings

**85. At one's wits end**
(1) A man of ability
(2) At the last moment
(3) To get puzzled
(4) Undecided controversy

**Directions (86–87) :** Improve the bracketed part of each sentence.

**86.** I had not completed my project so I thought I was **(done with)** when the manager asked me to hand it in.
(1) done for
(2) done in
(3) done on
(4) No improvement

**87.** Rohan was upset and so **(picked up)** his food while his cousins ate heartily.
(1) Picked out
(2) Picked on
(3) Picked at
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. To give up a throne voluntarily**
(1) Archer (2) Bigot
(3) Abdicate (4) Delegate

**89. Words written on the tomb of a person**
(1) Epigram (2) Epitome
(3) Epicure (4) Epitaph

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Accurate
(2) Business
(3) Sedentery
(4) Jewellery

**91.** (1) Chaufer
(2) Committee
(3) Veterinary
(4) Repentance

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. They never desert us even when all fair weather friends have deserted us.
Q. Books are never failing friends.
R. They dispel the dark clouds of gloom from our minds and increase our happiness if we are already happy.
S. Through the ages, the scriptures and other great books have provided, immeasurable solace to the wounded and strife torn humanity.
(1) QRSP (2) PRSQ
(3) RSPQ (4) QPRS

**93.** P. When the robber was near her bed, she stood up suddenly, 'brandishing the knife.
Q. One night the robber did enter her room but Lakshmi did not make any sound.
R. She just kept a tight hold of the knife and pretended to be sound asleep.
S. The robber was taken aback and with a loud cry, he ran out.
(1) SQRP (2) PRQS
(3) QRPS (4) PSQR

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**I will write an essay.**
(1) An essay will have been written by me.
(2) An essay will be written by me.
(3) An essay has been written by me.
(4) An essay had been written by me.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**Neha said, "Need I write a letter?"**
(1) Neha asked if she have to write a letter.
(2) Neha asked if she had been writing a letter.
(3) Neha asked of writing a letter.
(4) Neha asked if she had to write a letter.

**Directions (96–100) :** In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The quest for a **(96)** life engrosses every human being on this earth. Every man tends to define a happy life in a **(97)** individualistic fashion. **(98)** have attempted to define a happy life in various terms. Hedonists have a **(99)** notion that happiness lies in the **(100)** of physical appetites.

**96.** (1) simple (2) sad
(3) happy (4) real

**97.** (1) distinctly (2) identically
(3) similar (4) serious

**98.** (1) Professors
(2) Thinkers
(3) Researchers
(4) Scientists

**99.** (1) complex (2) distinct
(3) varied (4) simple

**100.** (1) gratification
(2) simplification
(3) purification
(4) identification

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (2) | **3.** (4) | **4.** (4) |
| **5.** (3) | **6.** (2) | **7.** (1) | **8.** (3) |
| **9.** (1) | **10.** (4) | **11.** (2) | **12.** (4) |
| **13.** (1) | **14.** (4) | **15.** (3) | **16.** (3) |
| **17.** (3) | **18.** (1) | **19.** (1) | **20.** (3) |
| **21.** (3) | **22.** (3) | **23.** (1) | **24.** (3) |
| **25.** (4) | **26.** (3) | **27.** (4) | **28.** (3) |
| **29.** (2) | **30.** (3) | **31.** (1) | **32.** (1) |
| **33.** (2) | **34.** (4) | **35.** (2) | **36.** (2) |
| **37.** (2) | **38.** (3) | **39.** (4) | **40.** (3) |
| **41.** (1) | **42.** (2) | **43.** (3) | **44.** (2) |
| **45.** (4) | **46.** (1) | **47.** (1) | **48.** (2) |
| **49.** (1) | **50.** (4) | **51.** (4) | **52.** (4) |
| **53.** (3) | **54.** (3) | **55.** (3) | **56.** (3) |
| **57.** (4) | **58.** (2) | **59.** (3) | **60.** (2) |
| **61.** (4) | **62.** (4) | **63.** (4) | **64.** (2) |
| **65.** (3) | **66.** (1) | **67.** (4) | **68.** (3) |
| **69.** (3) | **70.** (4) | **71.** (4) | **72.** (2) |
| **73.** (3) | **74.** (1) | **75.** (3) | **76.** (3) |
| **77.** (2) | **78.** (2) | **79.** (4) | **80.** (2) |
| **81.** (1) | **82.** (3) | **83.** (4) | **84.** (3) |
| **85.** (3) | **86.** (1) | **87.** (3) | **88.** (3) |
| **89.** (4) | **90.** (3) | **91.** (1) | **92.** (4) |
| **93.** (3) | **94.** (2) | **95.** (4) | **96.** (3) |
| **97.** (1) | **98.** (2) | **99.** (4) | **100.** (1) |

## EXPLANATIONS

**1.** (1) The unit of measurment of strength of electric current is Ampere. Similarly, depth of water is measured in fathom.

**2.** (2)

| A | K | P |
|---|---|---|
| ↓ | ↓ | ↓ |
| 1 | 11 | 16 |
| ↓ | ↓ | ↓ |
| $(1)^2$ | $(11)^2$ | $(16)^2$ |
| ↓ | ↓ | ↓ |
| 1 | 121 | 256 |

Similarly,

| L | N | O |
|---|---|---|
| ↓ | ↓ | ↓ |
| 12 | 14 | 15 |
| ↓ | ↓ | ↓ |
| $(12)^2$ | $(14)^2$ | $(15)^2$ |
| ↓ | ↓ | ↓ |
| 144 | 196 | 225 |

**3.** (4) 534 : 2

$\Rightarrow \frac{5+3}{4} = \frac{8}{4} = 2$

Similarly,

999 : 2

$\Rightarrow \frac{9+9}{9} = \frac{18}{9} = 2$

**4.** (4) Snooker is an indoor game while all others are outdoor games.

**5.** (3) $B \xrightarrow{+13} O \xrightarrow{-7} H$

$E \xrightarrow{+13} R \xrightarrow{-7} K$

$K \xrightarrow{+13} X \xrightarrow{-7} Q$

But,

$H \xrightarrow{+13} U \xrightarrow{-6} O$

**6.** (2) The number 463 is a Prime Number.

**7.** (1) Arrangement of words as per order in the dictionary :

1. Clocklipe

↓

5. Clockwise

↓

2. Cloddier

↓

3. Clodpates

↓

4. Clodpolls

**8.** (3) *e f g* [*h*] / [*e*] *e f f* [*g*] *g h*

*h*/*e* [*e*] *e f f* [*f*] *g g g h* [*h*] *h*

**9.** (1) $5 + 8\ (2)^3 = 13$

$13 + 27\ (3)^3 = 40$

$40 + 64\ (4)^3 = 104$

$104 + 125\ (5)^3 = \boxed{229}$

**10.** (4) $2x + x = 72$

$\Rightarrow 3x = 72$

$\therefore\ x = \frac{72}{3} = 24$

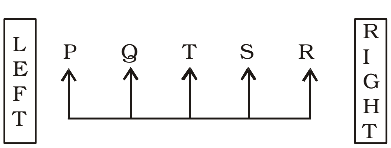
Present age of Aman

$= 2x = 2 \times 24 = 48$ years

After 6 years age of Aman

$= 48 + 6 = 54$ years

**11.** (2)




Q sits third to the left of R.

**12.** (4) There is no 'S' letter in the given word. Therefore, the word TASTE cannot be formed.

[E R A] D I C [A] T E ⇒ AREA

[E R A] D I [C] A T E ⇒ CARE

E R A [D I C] A T [E] ⇒ DICE

**13.** (1)

hit (ka) tom ⟶ ties the (shoes)

(ka) [lo] fod ⟶ (shoes) of [leather]

[lo] tin lot ⟶ [leather] and raxin

of ⇒ fod

**14.** (4)

| − ⇒ + | + ⇒ ÷ |
|---|---|
| ÷ ⇒ × | × ⇒ − |

$13 + 12 \times 9 \div 3 - 6 = ?$

$\Rightarrow ? = 13 \div 12 - 9 \times 3 + 6$

$\Rightarrow ? = \frac{13}{12} - 27 + 6$

$\Rightarrow ? = \frac{13 - 324 + 72}{12}$

$\Rightarrow ? = \frac{85 - 324}{12} = \frac{-239}{12}$

**15.** (3) 6 @ 4 @ 7 = 101

$\Rightarrow (6)^2 + (4)^2 + (7)^2 = 101$

$\Rightarrow 36 + 16 + 49 = 101$

2 @ 5 @ 11 = 150

$\Rightarrow (2)^2 + (5)^2 + (11)^2 = 150$

$\Rightarrow 4 + 25 + 121 = 150$

Therefore,

A @ 8 @ 9 = 289

$\Rightarrow (A)^2 + (8)^2 + (9)^2 = 289$

$\Rightarrow (A)^2 + 64 + 81 = 289$

$\Rightarrow (A)^2 = 289 - 145 = 144$

$\therefore\ A = \sqrt{144} = 12$

**16.** (3) First Figure

$(2 + 3) \times (2 + 3 - 1)$

$\Rightarrow 5 \times 4 = 20$

$(3 + 6) \times (3 + 6 - 1)$

$\Rightarrow 9 \times 8 = 72$

Second Figure

$(3 + 7) \times (3 + 7 - 1)$

$\Rightarrow 10 \times 9 = 90$

$(7 + 4) \times (7 + 4 - 1)$

$\Rightarrow 11 \times 10 = 110$

Third Figure

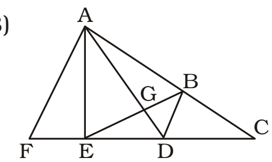
$(1 + 7) \times (1 + 7 - 1)$

$\Rightarrow 8 \times 7 = 56$

$(7 + 6) \times (7 + 6 - 1)$

$\Rightarrow 13 \times 12 = 156$

**17.** (3)




The triangles are :

ΔAFE; ΔAEG; ΔAED; ΔAGB; ΔADB; ΔADC; ΔAFD; ΔAFC; ΔGED; ΔGBD; ΔBDC; ΔBEC; ΔAEB; ΔAEC; ΔDBE

Thus, there are 15 triangles in the given figure.

**18.** (1) First Premise is Particular Affirmative (I–type).

Second Premise is Universal Affirmative (A–type).

Some banks are private.

All private are industry.

I + A ⇒ I–type of Conclusion "Some banks are industry."

This is the Conclusion I.

**19.** (1) After folding the figure :

6 lies opposite 3.

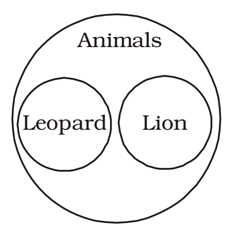
2 lies opposite 4.

1 lies opposite 5.

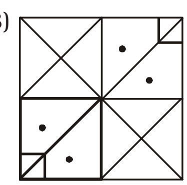
1 and 5 cannot be on the adjacent faces.

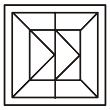
6 and 3 cannot be on the adjacent faces.

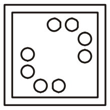
**20.** (3) Leopard is different from Lion. But both are Animals.

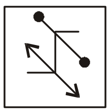



**21.** (3)



**22.** (3) 

**23.** (1) 

**24.** (3) 

**25.** (4) R ⇒ 02, 14, 21, 33, 40
A ⇒ 00, 12, 24, 31, 43
T ⇒ 55, 67, 79, 86, 98
E ⇒ 04, 11, 23, 30, 42
S ⇒ 58, 65, 77, 89, 96

| Option | R | A | T | E | S |
|---|---|---|---|---|---|
| (1) | 33 | 00 | 98 | 30 | 88 |
| (2) | 14 | 43 | 55 | 11 | 68 |
| (3) | 21 | 24 | 86 | 42 | 56 |
| (4) | 02 | 12 | 67 | 04 | 96 |

**26.** (3) Courier service comes under tertiary sector or service sector, the third of the three economic sectors of the three-sector theory. The service sector consists of the production of services instead of end products.The others are the secondary sector manufacturing), and the primary sector (agriculture, raw materials).

**27.** (4) Direct Taxes, as the name suggests, are taxes that are directly paid to the government by the taxpayer. It is a tax applied on individuals and organizations directly by the government e.g. income tax, corporation tax, wealth tax, etc. It is also defined as the tax where the liability as well as the burden to pay it resides on the same individual.

**28.** (3) Fundamental rights are justiciable in nature which means that the aggrieved party can approach court if his fundamental rights are violated. Article 32 confers the power on the Supreme Court to protect and defend the Fundamental Rights of the people. In contrast, the fundamental duties and the directive principles of state policy are not justiciable.

**29.** (2) The Forty-second Amendment of 1976, is sometimes called a "mini-Constitution" or the "Constitution of Indira". It brought about the most widespread changes to the Constitution in its history. Almost all parts of the Constitution, including the Preamble and amending clause, were changed by the 42nd Amendment, and some new articles and sections were inserted.

**30.** (3) Brihadeshwara Temple: atemple of Lord Shiva in Thanjavur, Tamil Nadu; Dilwara Temple: Jain temples located near Mount Abu, Rajasthan; Lingaraja Temple: a temple of Harihara, a form of Shiva and Vishnu, in Bhubaneshwar, Odisha; Hampi Group of Monuments: ruined temple complexes of the Vijayanagara Empire in Hampi, Ballari district of Karnataka.

**31.** (1) The Battle of Plassey was fought between Nawab Siraj-ud-Daulah, the last independent Nawab of Bengal, and the British East India Company under Robert Clive on 23 June, 1757. It resulted in a decisive victory of the British East India Company over the Nawab and his French allies and the establishment of the Company rule in Bengal.

**32.** (1) The Alps are the highest and most extensive mountain range system that lies entirely in Europe. It stretches approximately 1,200 kilometres across eight Alpine countries: France, Switzerland, Italy, Monaco, Liechtenstein, Austria, Germany, and Slovenia.

**33.** (2) ITCZ stands for Inter Tropical Convergence Zone. It is a belt of low pressure which circles the Earth generally near the equator where the trade winds of the Northern and Southern Hemispheres come together. It is characterized by convective activity which generates often vigorous thunderstorms over large areas.

**34.** (4) Mycoplasma is a genus of bacteria that lacks a cell wall around their cell membrane. Without a cell wall, they are unaffected by many common antibiotics such as penicillin or other beta-lactam antibiotics that target cell wall synthesis. In comparison to other prokaryotes, they are consequently placed in a separate class Mollicutes(mollis, soft; cutis, skin).

**35.** (2) The mitochondria is called the powerhouse of the cell because it is responsible for producing most of the cell's energy, or adenosine tri-phosphate (ATP). In addition to supplying cellular energy, mitochondria are involved in other tasks, such as signaling, cellular differentiation, and cell death, as well as maintaining control of the cell cycle and cell growth.

**36.** (2) Pneumatophores are spongy erect roots extending above the surface of the water that facilitate the exchange of oxygen and carbon dioxide for the roots. They are specialized root structures that grow out from the water surface where inadequate oxygen required for normal respiration of the roots is present. They are seen in many mangrove species.

**37.** (2) The pitch of a sound is determined by the frequency of vibration of the sound waves. So higher the frequency the higher is the pitch. Frequency is often measured in units called Hertz (Hz). If a sound source vibrates at 100 vibrations per second, it has a frequency of 100 Hertz.

**38.** (3) The phenomena such as interference, diffraction, and polarization can only be explained when light is treated as a wave whereas photoelectric effect, line spectra, and the production and scattering of x rays demonstrate the par-

ticle nature of light. The photoelectric effect supports a particle theory of light in that it behaves like an elastic collision (one that conserves mechanical energy) between two particles, the photon of light and the electron of the metal.

**39.** (4) Alan Turing is considered by many to be the father of modern computer science as the world knows it. He formed the concept of the algorithms and computations with one of his inventions, the Turing machine. Some regard Charles Babbage, an English mathematician, as the father of modern computer for inventing (i) Difference engine and (ii) Analytical Engine.

**40.** (3) Calcium hypochlorite, an inorganic compound with formula Ca(ClO)2, is commonly known as bleaching powder. It is not highly soluble in water and is more preferably used in soft to medium-hard water. It is also used to sanitize public swimming pools and disinfect drinking water.

**41.** (1) Elements in the same group in the periodic table have similar chemical properties. This is because their atoms have the same number of electrons in the outer orbital. Those outer electrons are also called valence electrons. They are the electrons involved in chemical bonds with other elements.

**42.** (2) Nickel allergy is one of the most common causes of contact allergic dermatitis. In affected individuals, dermatitis (also called eczema) develops in places where nickel-containing metal is touching the skin. The most common sites for nickel dermatitis are the earlobes (from earrings), the wrists (from a watch strap) and the lower abdomen (from a jeans stud).

**43.** (3) Prime Minister Narendra Modi, on 31 December 2016, announced new schemes for poor, senior citizens and women including the Rs. 6000 pregnancy aid scheme. The scheme aims to bring down the maternal mortality rate. Under the scheme, a financial Aid of Rs. 6000 would be provided to pregnant women who undergo institutional delivery for hospital admission.

**44.** (2) Scottish physician Ian Donaldpioneered the use of diagnostic ultrasound in medicine. His article Investigation of Abdominal Masses by Pulsed Ultrasound, published 7 June, 1958 in the medical journal The Lancet, was one of the defining publications in the field. Ultrasound has become an important aid to diagnosing fetal progress during pregnancy.

**45.** (4) Summer Olympics 2020: to be held from 24 July to 9 August, 2020 in Tokyo; Summer Olympics 2016: held in Rio de Janeiro, Brazil, from 5 to 21 August, 2016; Summer Olympics 2012: took place in London and to a lesser extent across the United Kingdom from 25 July to 12 August, 2012.

**46.** (1) The Namami Brahmaputra River Festival', the biggest river festival of India in the North East was inaugurated by President Pranab Mukherjee in Guwahati on 31 March, 2017. The inauguration took place in the presence of Bhutan's Prime Minister Tshering Tobgay and Chief Minister of Assam Sarbananda Sonowal. The festival, tagged as 'India's largest river festival' was organised across 21 districts of the state.

**47.** (1) The government, in August 2016, announced Rajiv Gandhi Khel Ratna Award 2016 to Olympic medallist P.V. Sindhu and Sakshi Malik; ace gymnast Dipa Karmakar, who lost a medal by a whisker, and shooter Jitu Rai. This was for the first time that the nation's highest sporting award was conferred on four athletes.

**48.** (2) The book, titled Akhada: The Authorized Biography of Mahavir Singh Phogat,' has been authored by Saurabh Duggal. It tells the story of how Phogat fought against all odds to see his daughters Geeta Phogat and Babita Kumari win wrestling medals for India. The book hit bookstands days before the release of Bollywood blockbuster "Dangal" in which Aamir Khan portrays the amateur wrestler and master coach on screen.

**49.** (1) Monash University Institute of Railway Technology (IRT), a Railway research centre in Australia, in March 2017, entered into an agreement with Dedicated Freight Corridor Corporation of India (DFCCIL), under the administrative control of Ministry of Railways for the establishment of a new applied research and development institute in India known as SRESTHA (Special Railway Establishment for Strategic Technology & Holistic Advancement).

**50.** (4) The Kaladan Multi-Modal Transit Transport Project is a project that will connect the eastern Indian seaport of Kolkata with Sittwe seaport in Rakhine State, Myanmar by sea. In Myanmar, it will then link Sittwe seaport to Paletwa, Chin State via the Kaladan river boat route, and then from Paletwa by road to Mizoram in Northeast India.

**51.** (4) Three consecutive natural numbers = $x$, $x + 1$ and $x + 2$.

According to the question,

$(x + x + 1 + x + 2)^2 - (x^2) - (x + 1)^2 - (x + 2)^2 = 292$

$\Rightarrow (3x + 3)^2 - x^2 - x^2 - 2x - 1 - x^2 - 4x - 4 = 292$

$\Rightarrow 9x^2 + 18x + 9 - 3x^2 - 6x - 5 = 292$

$\Rightarrow 6x^2 + 12x + 4 = 292$

$\Rightarrow 6x^2 + 12x - 288 = 0$

$\Rightarrow x^2 + 2x - 48 = 0$

$\Rightarrow x^2 + 8x - 6x - 48 = 0$

$\Rightarrow x(x + 8) - 6(x + 8) = 0$

$\Rightarrow (x - 6)(x + 8) = 0$

$\Rightarrow x = 6$ because $x \neq -8$

$\therefore$ Largest number

$= x + 2 = 6 + 2 = 8$

**OR**

From option (4),
Numbers = 6, 7 and 8
$\therefore (6 + 7 + 8)^2 - (6^2 + 7^2 + 8^2)$
$= (21)^2 - (36 + 49 + 64)$
$= 441 - 149 = 292$

**52.** (4) A will finish the work in 48 days working for an hour daily.
B will do the work in 40 days working for an hour daily
$\therefore$ (A + B)'s 1 day's work

$= \frac{1}{48} + \frac{1}{40} = \frac{5+6}{240} = \frac{11}{240}$

$\therefore$ Time taken by both while working for 1 hour daily

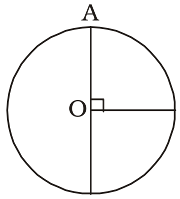
$= \frac{240}{11}$ days

$\therefore$ Number of working hours daily to finish the work in 5 days

$= \frac{240}{11 \times 5} = \frac{48}{11}$ hours

$= 4\frac{4}{11}$ hours

**53.** (3)




$\therefore$ BOC = 90°

$\therefore BC = \frac{90°}{360°} \times 2\pi r$

$\Rightarrow \frac{\pi r}{2} = 44$

$\Rightarrow \frac{22}{7} \times r = 44 \times 2$

$\Rightarrow r = \frac{44 \times 2 \times 7}{22} = 28$ cm.

**54.** (3) C.P. of article = Rs. 100 (let)
Marked price of article = Rs. $x$.
According to the question,

$x \times \frac{75}{100} = 85$

$\Rightarrow x = \frac{8500}{75} = \text{Rs. } \frac{340}{3}$

When no discount is given,

Profit $= \frac{340}{3} - 100$

$= \frac{340 - 300}{3} = \text{Rs. } \frac{40}{3}$

$\because$ C.P. = Rs. 100
$\therefore$ Profit per cent

$= \frac{40}{3} = 13\frac{1}{3}\% = 13.33\%$

**55.** (3) A : B : C = 24 : 36 : 84
= 2 : 3 : 7
Sum of the terms of ratio
= 2 + 3 + 7 = 12
$\therefore$ Quantity of wheat of type - A in third box

$= \left(\frac{2}{12} \times 84\right)$ kg.

= 14 kg.

**56.** (3) Number of boys in the group = $x$
According to the question,
$36x = 35.7x + (42 - 30)$
$\Rightarrow 36x - 35.7x = 12$
$\Rightarrow 0.3x = 12$

$\Rightarrow x = \frac{12}{0.3} = \frac{120}{3} = 40$

**57.** (4) C.P. of calculator = Rs. 100
First S.P. = Rs. 115
Second S.P. = Rs. 345
$\therefore$ Profit = (345 – 100)
= Rs. 245
$\therefore$ Profit per cent = 245

**58.** (2) Total votes polled = $x$
Vote percentage of the loser = 30%
According to the question,
40% of $x$ = 15400

$\therefore$ 30% of $x = \frac{15400}{40} \times 30$

= 11550

**59.** (3) Rate downstream of boat = $x$ kmph.
Rate upstream = $y$ kmph.
According to the question,

$\frac{4}{x} + \frac{4}{y} = 1$ ..... (i)

and $\frac{5}{x} + \frac{3}{y} = \frac{55}{60}$

$= \frac{11}{12}$ ...... (ii)

By equation (i) × 3 – equation (ii) × 4,

$\frac{12}{x} + \frac{12}{y} - \frac{20}{x} - \frac{12}{y} = 3 - \frac{11}{3}$

$\Rightarrow -\frac{8}{x} = \frac{-2}{3}$

$\Rightarrow x = \frac{8 \times 3}{2} = 12$ kmph.

From equation (i),

$\frac{4}{12} + \frac{4}{y} = 1$

$\Rightarrow \frac{4}{y} = 1 - \frac{1}{3} = \frac{2}{3}$

$\Rightarrow y = \frac{4 \times 3}{2} = 6$ kmph.

$\therefore$ Speed of boat in still water

$= \frac{1}{2}(x + y) = \frac{1}{2}(12 + 6) = 9$ kmph.

**60.** (2) Interest

$= \text{Rs. } \left(\frac{9500 \times 130}{100}\right)$

= Rs. 12350

$\therefore \text{Rate} = \frac{\text{S.I.} \times 100}{\text{Principal} \times \text{Time}}$

$= \frac{12350 \times 100}{9500 \times 10}$

= 13% per annum

**OR**

Interest for 10 years = 130% of principal
$\therefore$ Rate of interest p.a.

$= \frac{130}{10} = 13\%$

**61.** (4) $x^6 - 18x^3 + k$
$= (x^3)^2 - 2 \times x^3 \times 9 + k$
$[\because (a-b)^2 = a^2 - 2ab + b^2]$
$\therefore k = 9^2 = 81$

**62.** (4) $\frac{\sqrt{5+x} + \sqrt{5-x}}{\sqrt{5+x} - \sqrt{5-x}} = \frac{3}{1}$

By componendo and dividendo,

$\frac{\sqrt{5+x} + \sqrt{5-x} + \sqrt{5+x} - \sqrt{5-x}}{\sqrt{5+x} + \sqrt{5-x} - \sqrt{5+x} + \sqrt{5-x}}$

$= \frac{3+1}{3-1}$

$\Rightarrow \frac{2\sqrt{5+x}}{2\sqrt{5-x}} = \frac{4}{2} = 2$

$\Rightarrow \left(\frac{\sqrt{5+x}}{\sqrt{5-x}}\right)^2 = 4$

$\Rightarrow \frac{5+x}{5-x} = 4$

$\Rightarrow 5 + x = 20 - 4x$

$\Rightarrow 5x = 20 - 5 = 15$

$\Rightarrow x = \frac{15}{5} = 3$

**OR**

From the given options,
When $x = 3$,

LHS $= \frac{\sqrt{8}+\sqrt{2}}{\sqrt{8}-\sqrt{2}} = \frac{2\sqrt{2}+\sqrt{2}}{2\sqrt{2}-\sqrt{2}}$

$= \frac{\sqrt{2}(2+1)}{\sqrt{2}(2-1)} = \frac{3}{1}$

**63.** (4) $x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$
$= (x + y + z)((x + y + z)^2 - 3xy - 3yz - 3zx)$
$\Rightarrow x^3 + y^3 + z^3 - 3 \times 48 = 12((12)^2 - 3 \times 44)$
$\Rightarrow x^3 + y^3 + z^3 - 144$
$= 12(144 - 132)$
$\Rightarrow x^3 + y^3 + z^3 - 144 = 12 \times 12$
$= 144$
$\Rightarrow x^3 + y^3 + z^3 = 144 + 144$
$= 288$

**64.** (2) $x = \frac{4\sqrt{ab}}{\sqrt{a}+\sqrt{b}}$

$= \frac{2\sqrt{a} \times 2\sqrt{b}}{\sqrt{a}+\sqrt{b}}$

$\Rightarrow \frac{x}{2\sqrt{a}} = \frac{2\sqrt{b}}{\sqrt{a}+\sqrt{b}}$

By componendo and dividendo,

$\frac{x+2\sqrt{a}}{x-2\sqrt{a}} = \frac{2\sqrt{b}+\sqrt{a}+\sqrt{b}}{2\sqrt{b}-\sqrt{a}-\sqrt{b}}$

$= \frac{\sqrt{a}+3\sqrt{b}}{\sqrt{b}-\sqrt{a}}$ ...... (i)

Similarly,

$\frac{x}{2\sqrt{b}} = \frac{2\sqrt{a}}{\sqrt{a}+\sqrt{b}}$

$\Rightarrow \frac{x+2\sqrt{b}}{x-2\sqrt{b}} = \frac{2\sqrt{a}+\sqrt{a}+\sqrt{b}}{\sqrt{a}-\sqrt{b}}$

$= \frac{3\sqrt{a}+\sqrt{b}}{\sqrt{a}-\sqrt{b}}$ ...... (ii)

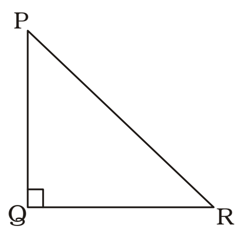
$\therefore \frac{x+2\sqrt{a}}{x-2\sqrt{a}} + \frac{x+2\sqrt{b}}{x-2\sqrt{b}}$

$= \frac{\sqrt{a}+3\sqrt{b}}{\sqrt{b}-\sqrt{a}} - \frac{3\sqrt{a}+\sqrt{b}}{\sqrt{b}-\sqrt{a}}$

$= \frac{\sqrt{a}+3\sqrt{b}-3\sqrt{a}-\sqrt{b}}{\sqrt{b}-\sqrt{a}}$

$= \frac{2(\sqrt{b}-\sqrt{a})}{\sqrt{b}-\sqrt{a}} = 2$

**65.** (3)




$\Delta PQR$ is a right angled triangle.
Hypotenuse (PR)

$= \sqrt{PQ^2 + QR^2}$

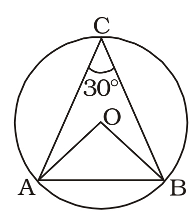
$= \sqrt{12^2 + 5^2} = \sqrt{144+25}$

$= \sqrt{169} = 13$ cm.

$\therefore$ Circum-radius

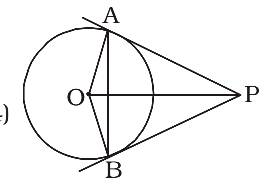
$= \frac{PR}{2} = \frac{13}{2} = 6.5$ cm.

**66.** (1)




$\angle ACB = 30°$
$\therefore$ Angle at the centre
$= \angle AOB = 60°$
OA = OB = radius
$\therefore \angle OAB = \angle OBA = 60°$
$\Delta OAB$ is an equilateral triangle.
$\therefore$ OA : AB = 1 : 1

**67.** (4)




$\angle AOB = 120°$
$\therefore \angle AOP = 60°$
$\angle OAP = 90°$
$\angle APO = 30°$
From $\Delta OAP$,

$\tan 30° = \frac{OA}{AP}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{OA}{6}$

$\Rightarrow OA = \frac{6}{\sqrt{3}} = 2\sqrt{3}$ cm.

$\therefore$ Area of $\Delta OAP$

$= \frac{1}{2} \times OA \times AP$

$= \frac{1}{2} \times 2\sqrt{3} \times 6 = 6\sqrt{3}$ sq. cm.

Area of $\Delta OAB$

$= \frac{1}{2} \times OA^2 \times \sin 120°$

$= \frac{1}{2} \times 2\sqrt{3} \times 2\sqrt{3} \times \frac{\sqrt{3}}{2}$

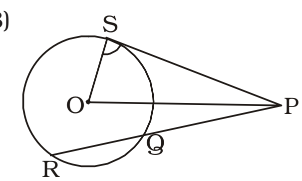
$= 3\sqrt{3}$ sq. cm.

$\therefore$ Area of $\Delta APB$

$= (2 \times 6\sqrt{3} - 3\sqrt{3})$ sq. cm.

$= 9\sqrt{3}$ sq. cm.

**68.** (3)




PQ = 4.5 cm.
PR = (4.5 + 3.5) cm. = 8 cm.
$\therefore PS^2 = PQ \times PR$
$= 4.5 \times 8 = 36$

$\Rightarrow PS = \sqrt{36} = 6$ cm.

$\therefore$ From $\Delta POS$,
$\angle OSP = 90°$

$\therefore OS = \sqrt{OP^2 - PS^2}$

$= \sqrt{(6.5)^2 - (6)^2}$

$= \sqrt{12.5 \times 0.5} = \sqrt{6.25}$
$= 2.5$ cm.

**69.** (3) $\frac{1}{1-\tan\theta}-\frac{1}{1+\tan\theta}$

$= \frac{1+\tan\theta-1+\tan\theta}{(1-\tan\theta)(1+\tan\theta)}$

$= \frac{2\tan\theta}{1-\tan^2\theta} = \tan 2\theta$

**70.** (4) $\tan\theta + \cot\theta = x$

On squaring both sides,

$(\tan\theta + \cot\theta)^2 = x^2$

$\Rightarrow \tan^2\theta + \cot^2\theta + 2\tan\theta.\cot\theta = x^2$

$\Rightarrow \tan^2\theta + \cot^2\theta = x^2 - 2$

$[\because \tan\theta.\cot\theta = 1]$

On squaring again,

$= (\tan^2\theta + \cot^2\theta)^2 = (x^2 - 2)^2$

$\Rightarrow \tan^4\theta + \cot^4\theta + 2\tan^2\theta.\cot^2\theta = (x^2 - 2)^2$

$\Rightarrow \tan^4\theta + \cot^4\theta + 2 = x^4 - 4x^2 + 4$

$\Rightarrow \tan^4\theta + \cot^4\theta = x^4 - 4x^2 + 2 = x^2(x^2 - 4) + 2$

**71.** (4) $\tan^2\theta + \cot^2\theta = 2$

$(\tan\theta + \cot\theta)^2 - 2 = 2$

$\Rightarrow (\tan\theta + \cot\theta)^2 = 4$

$\Rightarrow \tan\theta + \cot\theta = 2$

$\Rightarrow \frac{\sin\theta}{\cos\theta}+\frac{\cos\theta}{\sin\theta} = 2$

$\Rightarrow \frac{\sin^2\theta+\cos^2\theta}{\sin\theta.\cos\theta} = 2$

$\Rightarrow \frac{1}{\sin\theta.\cos\theta} = 2$

$\Rightarrow \sec\theta.\mathrm{cosec}\theta = 2$

$\therefore 2^{\sec\theta.\,\mathrm{cosec}\theta} = 2^2 = 4$

**72.** (2) Required percentage increase = $\left(\frac{122-65}{65}\right)\times 100$

$= \frac{5700}{65} \approx 87.69\%$

**73.** (3) Required answer ⇒ Bank 1, Bank 4 and Bank 5

**74.** (1) I ⇒ $\frac{295}{122}$

II ⇒ $\frac{211}{123}$

Clearly, I > II

**75.** (3) It is obvious from the table. Calculation is not needful.

Bank 5 ⇒ 80 → 158, Percentage increase = 97.5

Bank 2 ⇒ 65 → 122, Percentage increase = 87.7

Bank 3 ⇒ 138 → 211

Bank 4 ⇒ 109 → 157

**76.** (3) **Visit (Verb)** = to go to see a person for a period of time. Hence, (to) meet her aunt ...... should be used here.

**77.** (2) The use of article 'the' before comparative degree is improper.

Hence, ....... Kalidas was greater ......... should be used here.

**78.** (2) **Fall through** = to not be completed or not happen

**Look at the sentence :**

Our plans fell through because of lack of money.

**79.** (4) **Within** ⇒ before a particular period of time has passed.

**80.** (2) **Surreptitious (Adjective)** = done secretly; hidden; secret; furtive.

**Look at the sentence :**

She sneaked a surreptitious glance at her watch.

**81.** (1) **Inanition (Noun)** = the state of not having any energy or enthusiasm for doing things, listlessness; inertia; lethargy.

**Look at the sentence :**

After a period of enforced inanition, she found a new job.

**82.** (3) **Imbroglio (Noun)** = a complicated situation that causes cofusion or embarrassment, especially one that is political; quandary; complexity; complication.

**Composure (Noun)** = the state of being calm and in control of your feelings or behaviour; self control; tranquillity.

**Look at the sentences :**

Russia became anxious to withdraw its soldiers from the Syria imbroglio.

I didn't want to lose my composure in front of her.

**83.** (4) **Bequest (Noun)** = money or property that you ask to be given to a particular person when you die; a legacy; benefaction.

**Withdraw (Verb)** = to stop giving or offering something.

Its correct antonym should be withdrawal

**Look at the sentences :**

He left a bequest to each of his grandchildren.

Workers have threatened to withdraw their work.

Customers will not be charged for withdrawals.

**84.** (3) **Adam's ale** = water; aqua.

**Look at the sentence :**

A waitress asked him what he wanted to drink, and he said, 'Adam's Ale.

**85.** (3) **At one's wits end** = to be so worried by a problem that you do not know what to do next ; to get puzzled.

**Look at the sentence :**

Scientists are at their wits end as to why the whale had swum to the shore.

**86.** (1) **be done for** = to be in a very bad situation; to be certain to fail; to be caught and punished for doing something illegal.

**be done with** = to have finished dealing with somebody or doing or using something.

Hence, done for....... shoule be used here.

**87.** (3) **Pick at** = to eat food slowly, taking small amounts or bites because you are not hungry.

**90.** (3) **Sedentary (Adjective)** = of work, activities etc. in which you spend a lot of time sitting down.

**Look at the sentence :**

He became increasingly sedentary in later life.

**91.** (1) **Chauffeur** = a person whose job is to drive a car, especially for somebody rich or important.

**94.** (2) Subject + will be + $V_3$ + by + Object.

**95.** (4) Connective ⇒ if

Need I write a letter ? ⇒ she had to write a letter.

**97.** (1) **Distinctly (Adverb)** = differently ; clearly.

**100.** (1) **Gratification (Noun)** = the state of feeling pleasure; satisfaction.

❑❑❑

SET 16

# SOLVED PAPER
# SSC CGL TIER-I (CBE) EXAM

**Held on : 11.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word-pair from the given alternatives :
Heart : Organ : : ? : ?
(1) Bones : Calcium
(2) Eyes : Organ
(3) Leg : Feet
(4) Ear : Sense

**2.** In the following question, select the related letters from the given alternatives :
BPTW : CQUX : : CHNS : ?
(1) DIST (2) DIOT
(3) BGOT (4) DSTO

**3.** In the following question, select the related number from the given alternatives :
48 : 63 : : 80 : ?
(1) 97 (2) 98
(3) 99 (4) 101

**4.** In the following question, select the odd word-pair from the given alternatives :
(1) Calendar : Dates
(2) Dairy : Milk
(3) Notebook : Notes
(4) Accounts : Entries

**5.** In the following question, select the odd letters from the given alternatives :
(1) M (2) E
(3) S (4) W

**6.** In the following question, select the odd number from the given alternatives :
(1) 26 (2) 50
(3) 82 (4) 120

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Train 2. Topper
3. Tingling 4. Tumbler
5. Traction
(1) 23541 (2) 32154
(3) 25314 (4) 32514

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series :
DK, FN, HQ, ?
(1) KS (2) JT
(3) KT (4) JS

**9.** In the following question, select the missing number from the given alternatives :
2, 5, 17, 71, ?
(1) 131 (2) 247
(3) 359 (4) 419

**10.** Akshar remembers that the match is after 26th April but before 30th April, while Suresh remembers that the match is after 22nd April but before 28th April. On which date of April is the match?
(1) 29 (2) 26
(3) 27 (4) 28

**11.** In a row of books, a book of English is 16th from left end of row. A book of Mathematics is 12th from the right end. If the Mathematics book is 6th to the right of the English book, then how many total books are there in the row?
(1) 33 (2) 32
(3) 34 (4) 31

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**PASSENGER**
(1) ANGER (2) PASS
(3) PAGE (4) PAIN

**13.** In a certain code language, "TREASON" is written as "RKWWINX" and "POULTRY" is written as "CNXHYKT". How is "NUMBER" written in that code language?
(1) NIXQQR (2) JAIFAV
(3) RQQXIN (4) VAFIAJ

**14.** In the following question, by using which mathematical operators will the expression become correct?
30 ? 6 ? 4 ? 5 ? 4
(1) –, =, × and +
(2) +, =, × and –
(3) =, ×, + and –
(4) –, +, = and ×

**15.** If 13 # 9 = 94 and 18 # 7 = 100, then 24 # 6 = ?
(1) 121 (2) 113
(3) 148 (4) 115

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

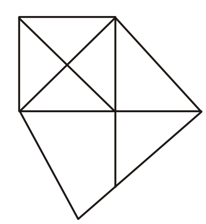
| 2 | 5 |
|---|---|
| 14 | 9 |

| 7 | 10 |
|---|---|
| 19 | 14 |

| 8 | 11 |
|---|---|
| 20 | ? |

(1) 14 (2) 15
(3) 17 (4) 19

**17.** How many triangles are there in the given figure?



(1) 11 (2) 12
(3) 13 (4) 15

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusions logically follows the given statements.

**Statements :**

I. All books are erasers.

II. All sharpeners are books.

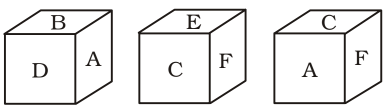
**Conclusions :**

I. All sharpeners are erasers.

II. Some books are sharpeners.

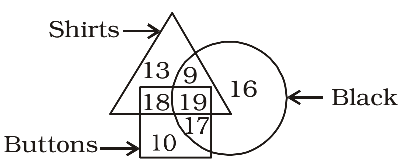
(1) Only Conclusion I follows.
(2) Only Conclusion II follows.
(3) Both Conclusions follow.
(4) Neither Conclusion I nor Conclusion II follows.

**19.** Three positions of a cube are shown below. What will come opposite to face containing 'E'?




(1) B (2) D
(3) A (4) F

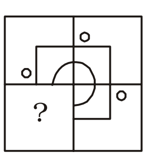
**20.** In the given figure, how many black buttons are shirts ?



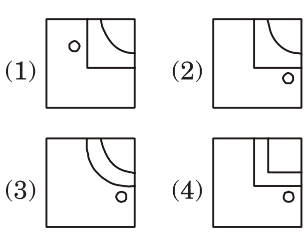

(1) 37 (2) 19
(3) 36 (4) 27

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

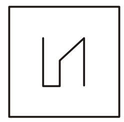



**Answer Figures :**

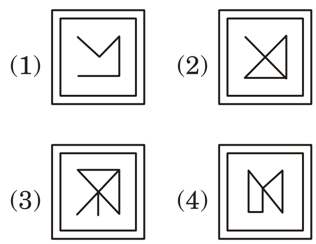



**22.** From the given answer figures, select the one in which the question figure is hidden/ embedded.

**Question Figure :**

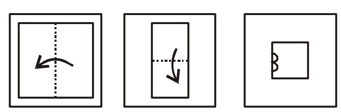


**Answer Figures :**

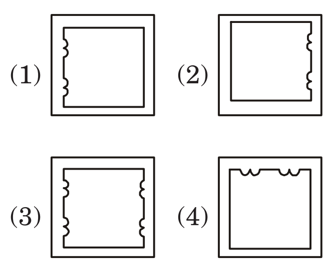



**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

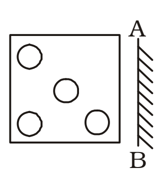


**Answer Figures :**

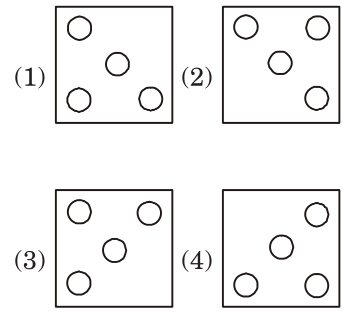



**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'P' can be represented by 12, 43 etc and 'O' can be represented by 67, 88 etc. Similarly, you have to identify the set for the word "STROM".

**Matrix – I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | P | Q | R | S | T |
| 1 | S | T | P | Q | R |
| 2 | Q | R | S | T | P |
| 3 | T | P | Q | R | S |
| 4 | R | S | T | P | Q |

**Matrix – II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | N | O | M | L | K |
| 6 | L | K | O | M | N |
| 7 | O | L | N | K | M |
| 8 | M | N | K | O | L |
| 9 | K | M | L | N | O |

(1) 10, 04, 33, 57, 69
(2) 41, 42, 14, 68, 86
(3) 34, 23, 40, 88, 78
(4) 22, 11, 21, 75, 96

## GENERAL AWARENESS

**26.** An economic system combining private and state enterprise is called as _____
(1) Market economy
(2) Centrally planned economy
(3) Private economy
(4) Mixed economy

**27.** What was the main motive of Third Five Year Plan in India?
(1) Rural development
(2) Agriculture
(3) Financial inclusion
(4) Economicre form

**28.** Under which article, President of India can proclaim constitutional emergency?
(1) Article 32
(2) Article 349
(3) Article 356
(4) Article 360

**29.** How many members of upper house (Rajya Sabha) can be nominated by President of India?
(1) 10 (2) 12
(3) 14 (4) 16

**30.** Who wrote 'Akbarnama'?
(1) Abul Fazal
(2) Faizi
(3) Abdur Rahim
(4) Abdul Qadir

**31.** Which Sikh Guru initiated 'The Khalsa'?
(1) Guru Nanak Dev
(2) Guru Gobind Singh
(3) Guru Angad Dev
(4) Guru Tegh Bahadur

**32.** A difference between 2 longitudes at equator is nearby equivalent to _____ km.
(1) 101 (2) 111
(3) 121 (4) 91

**33.** Which of the following winds are hot dust laden and blow from Sahara desert towards Mediterranean Region?
(1) Sirocco (2) Loo
(3) Foehn (4) Mistral

**34.** Which of the following are longest cells of human body?
(1) Pancreatic cells
(2) Epethelial cells
(3) Nerve cells
(4) Epidermal cells

**35.** Which of the following is responsible for giving colour to human skin?
(1) Luciferin
(2) Haemoglobin
(3) Flavonoids
(4) Melanin

**36.** Which of the following disease is non-communicable in nature?
(1) Cholera
(2) Chicken-pox
(3) Tuberculosis
(4) Cancer

**37.** Electric Motor converts _____ energy to mechanical energy
(1) sound
(2) mechanical
(3) chemical
(4) electrical

**38.** Optical fibre works on which of the following principle of light?
(1) Reflection
(2) Refraction
(3) Diffraction
(4) Total internal reflection

**39.** Which key is used to move to next line in a Ms-Word document?
(1) Enter key
(2) Escape key
(3) Shift key
(4) Return key

**40.** In which industry Potassium Nitrate is used commercially?
(1) Glass Manufacturing
(2) Electroplating
(3) Fire Cracker Manufacturing
(4) Leather Industry

**41.** Which of the following is not an example of Allotrope?
(1) Diamond (2) Graphite
(3) Ozone (4) Steel

**42.** Which of the following three R's are regarded as environment friendly?
(1) Reduce – Reuse – Recycle
(2) Reduce – Reuse – Reutilize
(3) Recollect – Reuse – Reutilize
(4) Reduce – Renew – Reutilize

**43.** In which of the following city "Urja Ganga", 1500 km long gas pipeline project has been launched in October, 2016?
(1) Ahmedabad
(2) New Delhi
(3) Ghaziabad
(4) Varanasi

**44.** Who invented Pentium Chip?
(1) C. Kumar Patel
(2) Tom Gunter
(3) Vince Emery
(4) Vinod Dham

**45.** What is the duration (in minutes) of one-half of a football match?
(1) 30 (2) 35
(3) 40 (4) 45

**46.** Which one of the following films was not directed by Satyajit Ray?
(1) Shatranj ke khiladi
(2) Charulata
(3) Jalsaghar
(4) Gumnam

**47.** Match the following (Arjuna Award 2016).

| Sport | Player |
|---|---|
| 1. Shooting | a. Ajinkya Rahane |
| 2. Hockey | b. Apurvi Chandela |
| 3. Cricket | c. Ritu Rani |

(1) 1-b, 2- a, 3-c
(2) 1-c, 2-a, 3-b
(3) 1-b, 2-c, 3-a
(4) 1-c, 2-b, 3-a

**48.** Which play of Shakespeare's was recently claimed to be dated wrongly?
(1) Macbeth
(2) Othello
(3) Hamlet
(4) Romeo Julliet

**49.** Which of the following country has co-sponsored 'Cobra Gold'– an annual multilateral military exercise alongwith Thailand?
(1) India (2) Indonesia
(3) USA (4) China

**50.** The Gurudwara 'Panja Sahib' is located in which neighbouring country of India?
(1) Pakistan
(2) Bangladesh
(3) Sri Lanka
(4) Nepal

## QUANTITATIVE APTITUDE

**51.** By what least number should 1200 be multiplied so that it becomes a perfect square?
(1) 2 (2) 3
(3) 5 (4) 13

**52.** A, B and C can complete a work in 10, 12 and 15 days respectively. All three of them start together but after 2 days A leaves the job and B left the job 3 days before the work was completed. C completed the remaining work alone. In how many days was the total work completed?
(1) 5 (2) 6
(3) 7 (4) 8

**53.** A solid sphere of diameter 7 cm is cut into two equal halves. What will be the increase (in $cm^2$) in the total surface area ?
(1) 77 (2) 154
(3) 87 (4) 38.5

**54.** After a discount of 23% an article is sold for Rs. 1848. What is the marked price (in Rs.) of the article?
(1) 2150 (2) 2275
(3) 2350 (4) 2400

**55.** If $\frac{3}{5}P = \frac{7}{2}Q = \frac{7}{5}R$, then what is the ratio of P, Q and R respectively?
(1) 3 : 2 : 5 (2) 3 : 35 : 14
(3) 5 : 7 : 5 (4) 35 : 6 : 15

**56.** What is the average of first 93 natural numbers?
(1) 45 (2) 46
(3) 47 (4) 49

**57.** A trader sells two items at the rate of Rs. 400 each. If he gains 15% on one and loses 15% on the other, then what is the value (in Rs.) of loss ?
(1) 18.41 (2) 22.14
(3) 20.25 (4) 24.36

**58.** 30% of a number exceeds 25% of the same number by 27. What is the value of the number?
(1) 540 (2) 270
(3) 108 (4) 90

**59.** 37 trees are planted in a straight line such that distance between any two consecutive trees is same. A car takes 20 seconds to reach the 13th tree. How much more time (in seconds) will it take to reach the last tree?
(1) 36 (2) 40
(3) 57 (4) 60

**60.** If a certain sum of money doubles itself in 7 years 8 months at simple interest, then what will be the yearly rate of interest (in %)?
(1) $18\frac{3}{4}$ (2) $13\frac{1}{23}$
(3) $26\frac{2}{23}$ (4) 30

**61.** What is the value of
$$\frac{1}{x^{(p-q)}+1}+\frac{1}{x^{(q-p)}+1}?$$
(1) 0 (2) 1
(3) $x^{(p-q)}$ (4) $x^{(p+q)}$

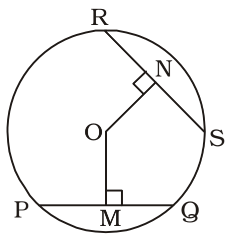
**62.** If $x = 8 + 2\sqrt{15}$, then what is the value of $\sqrt{x}+\frac{1}{\sqrt{x}}$?
(1) $2\sqrt{5}$
(2) $2\sqrt{3}$
(3) $\frac{(3\sqrt{5}+\sqrt{3})}{2}$
(4) $\frac{(3\sqrt{3}-\sqrt{5})}{2}$

**63.** What is the value of
$$\frac{1+a}{a^{\frac{1}{2}}+a^{\frac{-1}{2}}}-\frac{a^{\frac{1}{2}}+a^{\frac{-1}{2}}}{1+a}+a^{\frac{-1}{2}}?$$
(1) $\sqrt{a}$ (2) $\frac{1}{\sqrt{a}}$
(3) $\sqrt{a}+1$ (4) $\sqrt{a}-1$

**64.** If $\frac{p}{q}=\frac{x+3}{x-3}$, then what is the value of $\frac{p^2+q^2}{p^2-q^2}$?
(1) $\frac{x^2+9}{3x}$ (2) $\frac{x^2+18}{6x}$
(3) $\frac{x^2+18}{3x}$ (4) $\frac{x^2+9}{6x}$

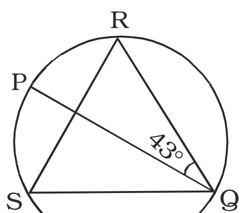
**65.** PQRS is a square, M is the mid-point of PQ and N is a point on QR such that NR is two-third of QR. If the area of ΔMQN is 48 $cm^2$, then what is the length (in cm) of PR ?
(1) $12\sqrt{2}$ (2) 12
(3) 24 (4) $24\sqrt{2}$

**66.** In the given figure, PQ = 30, RS = 24 and OM = 12, then what is the value of ON?



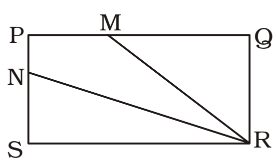

(1) 9 (2) 12
(3) 15 (4) 18

**67.** In the given figure, PQ is the diameter of the circle. What is the measure (in degrees) of ∠QSR?




(1) 23 (2) 37
(3) 47 (4) 57

**68.** In the given figure, PM is one-third of PQ and PN is one-third of PS. If the area of PMRN is 17 cm$^2$, then what is the area (in cm$^2$) of PQRS?




(1) 34 (2) 51
(3) 68 (4) 85

**69.** What is the simplified value of (1– sin A cos A)(sin A + cos A)?

(1) $\sin^2 A - \cos^2 A$
(2) $\sin^3 A + \cos^3 A$
(3) 0
(4) $\cos^2 A - \sin^2 A$

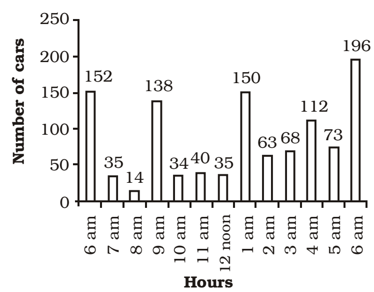
**70.** What is the simplified value of $\sqrt{\frac{1-\sin A}{1+\sin A}}$?

(1) tan A
(2) sec A
(3) sec A + tan A
(4) sec A – tan A

**71.** What is the simplified value of $\sqrt{\frac{1}{\sin^2 A}+\frac{1}{\cos^2 A}}$?

(1) sin A cos A
(2) tan A + cot A
(3) sin 2A
(4) tan A cot A

**Directions (72–75) :** The bar chart given below shows the number of cars parked in a multi-level parking from 6 am to 6 pm on a given day.




**72.** What is the average number (approximately) of cars parked per hour from 6 am to 6 pm on the given day?

(1) 80 (2) 85
(3) 73 (4) 78

**73.** At what time the percentage change in the number of parked cars is the maximum?

(1) 9 am to 10 am
(2) 12 noon to 1 pm
(3) 8 am to 9 am
(4) 6 am to 7 am

**74.** For how many hours the number of parked cars is less than the average on the given day?

(1) 5 (2) 8
(3) 6 (4) 7

**75.** If the charges of parking are Rs. 50 per hour, then what is the total income (in Rs.) from 6 am to 6 pm on the given day?

(1) 55500 (2) 50500
(3) 57500 (4) 59500

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** Are not your father (1)/ and your elder brother (2)/ out of town? (3)/ No Error (4)

**77.** Our office building comprises (1)/ seven floors and a restaurant at the top in an (2)/ area of about eight hundred sq. metres. (3)/ No Error (4)

**(Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** John as well as his friends always _____ the permission of his mother before going for a rugby match.

(1) asks
(2) receives
(3) seeks (4) soughts

**79.** My sister unlike my brothers __________ to have a career in Engineering.

(1) wants (2) want
(3) wish (4) aspire

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Boisterous**

(1) Clamorous
(2) Ferocious
(3) Fissiparous
(4) Voluminous

**81. Haggard**

(1) Emaciated(2) Insane
(3) Rejected (4) Ridicule

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Ostentation**
(1) Comical (2) Insane
(3) Modesty (4) Swanky

**83. Commiserate**
(1) Debatable
(2) Empathize
(3) Indifferent
(4) Legion

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Pillar to post**
(1) Main support of an object
(2) One place to another
(3) To be reluctant
(4) To incite others

**85. Hobson's choice**
(1) To choose first in row
(2) To make a careful choice
(3) No real choice at all
(4) To seek all favourable alternatives to choose from

**Directions (86–87) :** Improve the bracketed part of the sentence.

**86.** William Shakespeare is the greatest of **(all other)** writers.
(1) all the
(2) any other
(3) the other
(4) No Improvement

**87.** She is not used **(to sleep)** for so long.
(1) to be sleeping
(2) to sleep
(3) to sleeping
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. Giving undue favours to one's own kith and kin.**
(1) Ableism (2) Iconoclast
(3) Maiden (4) Nepotism

**89.** One who does not care for literature or art.
(1) Dictator (2) Hypocrite
(3) Philistine (4) Primitive

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Colonel (2) Hypocracy
(3) Offence (4) Strength

**91.** (1) Preceed (2) Proceed
(3) Recede (4) Succeed

**Directions (92–93) :** Each question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. P.** And if I think about something which didn't happen I start thinking about all the other things which didn't happen.
**Q.** But there is only ever one thing which happened at a particular time and a particular place.
**R.** And there are an infinite number of things which didn't happen at that time and that place.
**S.** A lie is when you say something happened which didn't happen.
(1) QSRP (2) SQPR
(3) SRQP (4) SQRP

**93. P.** The magnitude of the interdependence depends on the technique of production causing the shifts in the food supply curve.
**Q.** Interdependence of food and labour market is important for the development process.
**R.** Similarly, an upward shift in the food supply curve shifts up the food demand curve.
**S.** An upward shift in the food supply curve would simultaneously result in an upward shift in the labour demand curve.
(1) QSPR (2) QPRS
(3) PSRQ (4) SPQR

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
Who teaches you Mathematics?
(1) By whom are you taught Mathematics?
(2) By whom were you taught Mathematics ?
(3) By whom will you be taught Mathematics ?
(4) Mathematics is taught by whom?

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
"I don't know the answer. Do you"? She asked.
(1) She asked me if I knew the answer which she didn't.
(2) She said that she didn't know the answer and did I know it.
(3) She said that she didn't know the answer and asked me if I did.
(4) She told that she was not knowing the answer but wondered if I know.

**Directions (96–100) :** In the following questions, the paragraph given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Education is for life, not merely for a livelihood. As long as we are unmindful of this (**96**), the (**97**)of our educational curriculum

as well as that of our (**98**) and students is likely to remain(**99**). It is not enough for a society to have experts. It needs human beings who can think, feel and act generously, the kind of people who cannot be replaced by computers and (**100**).

**96.** (1) measure (2) resource (3) story (4) truth

**97.** (1) efficiency (2) effectiveness (3) quality (4) quantity

**98.** (1) friends (2) ideals (3) parents (4) teachers

**99.** (1) inadequate (2) indifferent (3) represented (4) unmeasurable

**100.** (1) mechanics (2) monitors (3) robots (4) televisions

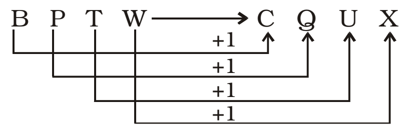
## ANSWERS

| **1.** (2) | **2.** (2) | **3.** (3) | **4.** (2) |
|---|---|---|---|
| **5.** (2) | **6.** (4) | **7.** (4) | **8.** (2) |
| **9.** (3) | **10.** (3) | **11.** (1) | **12.** (4) |
| **13.** (1) | **14.** (1) | **15.** (2) | **16.** (2) |
| **17.** (3) | **18.** (3) | **19.** (3) | **20.** (2) |
| **21.** (2) | **22.** (4) | **23.** (3) | **24.** (4) |
| **25.** (4) | **26.** (4) | **27.** (2) | **28.** (3) |
| **29.** (2) | **30.** (1) | **31.** (2) | **32.** (2) |
| **33.** (1) | **34.** (3) | **35.** (4) | **36.** (4) |
| **37.** (4) | **38.** (4) | **39.** (1) | **40.** (3 |
| **41.** (4) | **42.** (1) | **43.** (4) | **44.** (4) |
| **45.** (4) | **46.** (4) | **47.** (3) | **48.** (3) |
| **49.** (3) | **50.** (1) | **51.** (2) | **52.** (3) |
| **53.** (1) | **54.** (4) | **55.** (4) | **56.** (3) |
| **57.** (1) | **58.** (1) | **59.** (2) | **60.** (2) |
| **61.** (2) | **62.** (3) | **63.** (2) | **64.** (4) |
| **65.** (4) | **66.** (3) | **67.** (3) | **68.** (2) |
| **69.** (2) | **70.** (4) | **71.** (2) | **72.** (2) |
| **73.** (3) | **74.** (2) | **75.** (1) | **76.** (4) |
| **77.** (2) | **78.** (3) | **79.** (1) | **80.** (1) |
| **81.** (1) | **82.** (3) | **83.** (3) | **84.** (2) |
| **85.** (3) | **86.** (1) | **87.** (3) | **88.** (4) |
| **89.** (3) | **90.** (2) | **91.** (1) | **92.** (4) |
| **93.** (1) | **94.** (1) | **95.** (3) | **96.** (4) |
| **97.** (3) | **98.** (4) | **99.** (1) | **100.** (3) |

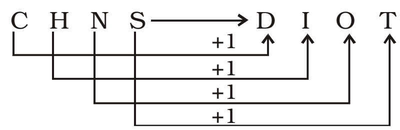
## EXPLANATIONS

**1.** (2) Heart is a vital organ. Similarly, eyes are also organs. Calcium is required for growth and strength of bones. Feet are parts of legs. Ear is one of the sense organs.

**2.** (2)




Similarly,




**3.** (3) $7 \times 7 - 1 = 48$

$8 \times 8 - 1 = 63$

Similarly,

$9 \times 9 - 1 = 80$

$10 \times 10 - 1 = 99$

**4.** (2) Dairy is a place where milk is kept and milk products are made. Calendar is a chart showing dates, days, weeks and months of a particular year. Notebook is a small book for writing notes. Accounts contain enteries of money paid or owed for goods and services.

**5.** (2) Except the letter E, all others are consonants. E is a vowel.

**6.** (4) Except the number 120, all other numbers are one more than the perfect squares of certain numbers.

$26 = 5 \times 5 + 1$

$50 = 7 \times 7 + 1$

$82 = 9 \times 9 + 1$

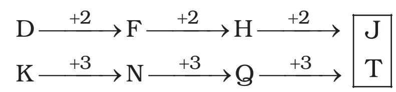
But,

$120 = 11 \times 11 - 1$

**7.** (4) Arrangement of words as per order in the dictionary :

3. Tingling
↓
2. Topper
↓
5. Traction
↓
1. Train
↓
4. Tumbler

**8.** (2)




**9.** (3) $2 \times 2 + 1 = 5$

$5 \times 3 + 2 = 17$

$17 \times 4 + 3 = 71$

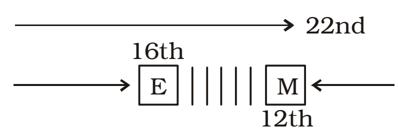
$71 \times 5 + 4 =$ 359

**10.** (3) According to Akshar, match is on 27th, 28th, or 29th April.

According to Suresh, match is on 23rd, 24th, 25th, 26th or 27th April.

Common date : 27th April

**11.** (1)




From the left end of row, the book of Mathematics is
16 + 6 = 22nd

Therefore, total number of books in the row
= 22 +12 –1
= 34 – 1 = 33

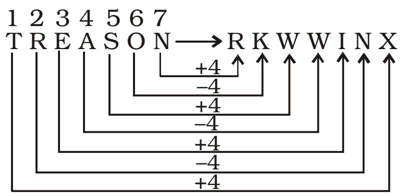
**12.** (4) There is no 'I' letter in the given word. Therefore, the word PAIN cannot be formed.

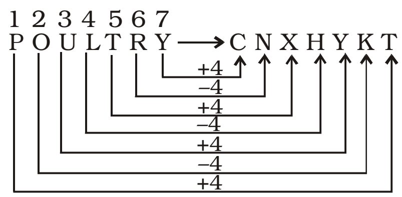
P [A] S S E [N G E R] ⇒ ANGER

[P A S S] E N G E R ⇒ PASS

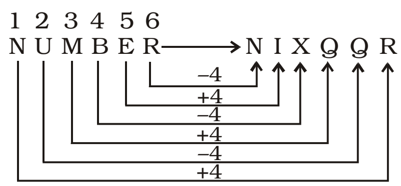
[P A] S S E N [G E] R ⇒ PAGE

**13.** (1)




Therefore,




**14.** (1) 30 ? 6 ? 4 ? 5 ? 4

$\Rightarrow$ 30 – 6 = 4 × 5 + 4

$\Rightarrow$ 24 = 20 + 4

**15.** (2) 13 # 9 = 94

$\Rightarrow$ 13 × 9 – 13 + 9 + 1 = 94

$\Rightarrow$ 117 – 23 = 94

$\Rightarrow$ 18 # 7 = 100

$\Rightarrow$ 18 × 7 – 18 + 7 + 1= 100

$\Rightarrow$ 126 – 26 = 100

Therefore,

24 # 6 = ?

$\Rightarrow$ ? = 24 × 6 – 24 + 6 + 1

$\Rightarrow$ ? = 144 – 31 = 113

**16.** (2) From first figure to second figure the corresponding number is greater by five while from first figure to third figure the corresponding figure is greater by six.

From First Figure to Second Figure :

2 + 5 = 7

5 + 5 = 10

14 + 5 = 19

9 + 5 = 14

From First figure to Third Figure :

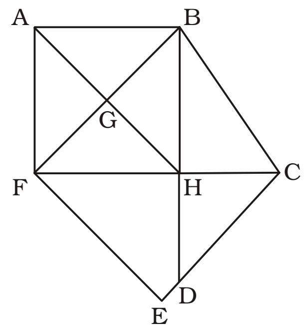
2 + 6 = 8

5 + 6 = 11

14 + 6 = 20

9 + 6 = 15

**17.** (3)




The triangles are :

ΔGFH; ΔGBA; ΔGAF; ΔGBH; ΔAFH; ΔABH; ΔBAF; ΔBHF; ΔBHC; ΔDHC; ΔCBD; ΔBFC; ΔECF

Thus, there are 13 triangles in the given figure.

**18.** (3) Both the Premises are Universal Affirmative (A–type).

All sharpeners are books.

All books are erasers.

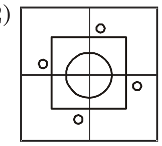
A + A $\Rightarrow$ A–type of Conclusion "All sharpeners are erasers". This is the Conclusion I.

Conclusion II is the Converse of the second Premise.

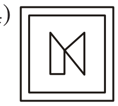
**19.** (3) B, C, D and F are on the faces adjacent to A. Therefore, A lies opposite E.

**20.** (2) Black buttons which are shirts can be shown by the number present in all the three geometrical figures. Such number is '19'.

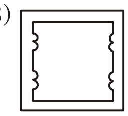
**21.** (2)



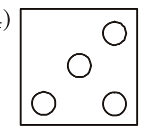
**22.** (4)



**23.** (3)



**24.** (4)



**25.** (4) S $\Rightarrow$ 03, 10, 22, 34, 41

T $\Rightarrow$ 04, 11, 23, 30, 42

R $\Rightarrow$ 02, 14, 21, 33, 40

O $\Rightarrow$ 56, 67, 75, 88, 99

M $\Rightarrow$ 57, 68, 79, 85, 96

| Option | S | T | R | O | M |
|---|---|---|---|---|---|
| (1) | 10 | 04 | 33 | 57 | 69 |
| (2) | 41 | 42 | 14 | 68 | 86 |
| (3) | 34 | 23 | 40 | 88 | 78 |
| (4) | 22 | 11 | 21 | 75 | 96 |

**26.** (4) A mixed economy is an economic system consisting of a mixture of either markets and economic planning, public ownership and private ownership, or markets and economic interventionism. In such a system, both the private enterprise and a degree of state monopoly (usually in public services, defense, infrastructure, and basic industries) coexist.

**27.** (2) The Third Five-year Plan (1961-66) stressed agriculture and improvement in the production of wheat. It aimed to increase in the agricultural produce and to achieve self-sufficiency by increasing food-grain production. However, it

failed miserably and the government was forced to declare "plan holidays" (from 1966–67, 1967–68, and 1968–69).

**28.** (3) Article 356 covers provisions in case of failure of constitutional machinery in State. It confers a power upon the President to be exercised only where he is satisfied that a situation has arisen where the government of a State cannot be carried on in accordance with the provisions of the Constitution. It is one of the Emergency provisions of the Indian Constitution.

**29.** (2) Article 80(3) of the constitution of India authorizes the President of India to nominate a maximum of 12 members to the Rajya Sabha. They are nominated for their contributions to art, literature, science, and social services.

**30.** (1) Akbarnama (The Book of Akbar) written by Abul Fazl, one of the Nine Jewels of Akbar's royal court. It is the official chronicle of the reign of Akbar, the third Mughal Emperor, commissioned by Akbar himself. It was written in Persian, the literary language of the Mughals.

**31.** (2) Khalsa which means 'pure' is the name given by Guru Gobind Singh to all Sikhs who have been baptised or initiated by taking Amrit in a ceremony called Amrit Sanchar. The Khalsa order was initially created on Baisakhi Day 30 March 1699, with Guru Gobind Singh baptizing five Sikhs and then in turn asking the five Khalsa's to baptize him.

**32.** (2) At the equator, the distance between two longitudes is 111.1 kms. Unlike latitude, the distance between degrees of longitude varies greatly. They are farthest apart at the equator and converge at the poles.The distance gradually shrinks to zero as they meet at the poles.

**33.** (1) Sirocco is the local name given to hot, dry and dusty winds blowing from Sahara Desert over central Mediterranean and southern Italy in front of an advancing depression. The presence of dust particles makes the atmosphere so turbid that even the sun is hardly visible. The sirocco is also called levech in Spain and leste in Madeira and Morocco.

**34.** (3) The longest cells in the human body are neurons or nerve cells. Neurons are cells within the nervous system and carry messages throughout the body.Although they range in size, some neurons are 3 feet long. These include the neurons that go from the skin into the spinal cord and up into the brain stem

**35.** (4) Although an individual's skin colour is influenced by numerous factors, the most significant is its content of a pigment called melanin. Melanin is also the pigment responsible for determining hair and eye colour. The melanin content of an individual's skin is primarily determined by genetics.

**36.** (4) Cancer is a non-communicable disease since it is not transmitted from one person or animal to another. Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body.These contrast with benign tumors, which do not spread to other parts of the body.

**37.** (4) An electric motor is an electrical machine that converts electrical energy into mechanical energy. The reverse of this is the conversion of mechanical energy into electrical energy and is done by an electric generator.

**38.** (4) An optical fiber is a cylindrical dielectric waveguide that transmits light along its axis, by the process of total internal reflection. The fiber consists of a core surrounded by a cladding layer, both of which are made of dielectric materials.To confine the optical signal in the core, the refractive index of the core must be greater than that of the cladding.

**39.** (1) The Enter key is used to move to next line in a Ms-Word document. However, in reality, this key creates a new paragraph and not move to the next line.

**40.** (3) Potassium Nitrate ($KNO_3$) is one of several nitrogen-containing compounds collectively referred to as saltpeter or saltpetre. It is commercially used in fertilizers, rocket propellants and fireworks. It is one of the major constituents of gunpowder (black powder).

**41.** (4) Diamond and graphite are the allotropes of pure carbon; while Ozone is a very reactive allotrope of oxygen. Steel is an alloy of iron and carbon containing less than 2% carbon and 1% manganese and small amounts of silicon, phosphorus, sulphur and oxygen.

**42.** (1) Reduce, reuse and recycle (R3) are the three essential components of environmentally-responsible consumer behavior. It is also known as the waste hierarchy. Sometimes a fourth R is added to the three basic ones, generally standing for either "rethink" or "recover.

**43.** (4) Urja Ganga gas pipeline project was inaugurated by Prime Minister Narendra Modi in his constituency Varanasi, Uttar Pradesh, on 24 October 2016. Under this project, a 2540-km long pipeline is planned to be laid across the states from Uttar Pradesh to Odisha. It promises to provide piped cooking gas to residents of Varanasi within two years.

**44.** (4) Vinod Dham invented the first Pentium Processor that made Intel the world's biggest chip-maker. He invented the AMD K6 , popularly known as the 'Pentium Killer'. He is popularly known as 'Pentium Engineer' for his contribution to the development of highly successful micro-processor.

**45.** (4) A football match consists of two halves and each half is 45 minutes long. Between the two halves, there is an interval, which is not more than 15 minutes long. Stoppage time (also called injury time) is the time added on at the end of each half at the discretion of the referee.

**46.** (4) Gumnaamis a 1965 Indian Bollywood suspense thriller film that was directed by Raja Nawathe. Manoj Kumar, Nanda, Pran, Helen and Mehmood starred in the movie. The film is an adaptation of the book And Then There Were None by Agatha Christie.

**47.** (3) Ajinkya Rahane: an Indian cricketer who is the vice-captain of the India national team in Test format; Apurvi Chandela: an Indian shooter who competes in the 10 metre air rifle event; Ritu Rani: is an Indian field hockey player and former captain of the national team.

**48.** (3) According to a new research published in January 2017, William Shakespeare's popular play Hamlet was dated wrongly. Until recently, academics believed that Shakespeare wrote Hamlet in early 1601. However, they now believe it was written in 1603 A.D.

**49.** (3) Cobra Gold is an annual multilateral military exercise co-sponsored by Thailand and the USA.The exercise is a part of the USA's efforts to expand regional cooperation and collaboration in vital areas such as disaster relief.It is considered as the largest military exercise in the Asia-Pacific region.

**50.** (1) Gurdwara Panja Sahib is a famous gurdwara located in Hasan Abdal, Pakistan. The shrine is considered to be particularly important as the handprint of the founder of Sikhism, Guru Nanak, is believed to be imprinted on a boulder at the gurdwara.

**51.** (2)

| 2 | 1200 |
|---|---|
| 2 | 600 |
| 2 | 300 |
| 2 | 150 |
| 3 | 75 |
| 5 | 25 |
| | 5 |

$\therefore$ $1200 = 2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 5$

$= 2^2 \times 2^2 \times 5^2 \times 3$

$\therefore$ Required number = 3

**52.** (3) Let the work be completed in $x$ days.

According to the question,

A's 2 day's work + B's $(x–3)$ days' work + C's $x$ days' work = 1

$\Rightarrow \frac{2}{10} + \frac{x-3}{12} + \frac{x}{15} = 1$

$\Rightarrow \frac{1}{5} + \frac{x}{12} - \frac{1}{4} + \frac{x}{15} = 1$

$\Rightarrow \frac{x}{12} + \frac{x}{15} = 1 + \frac{1}{4} - \frac{1}{5}$

$\Rightarrow \frac{5x + 4x}{60} = \frac{20 + 5 - 4}{20}$

$\Rightarrow \frac{9x}{60} = \frac{21}{20}$

$\frac{9x}{3} = 21$

$\Rightarrow 3x = 21$

$\Rightarrow x = \frac{21}{3} = 7$ days

**53.** (1) Surface area of solid sphere = $4\pi r^2$

$= 4 \times \pi \times \frac{7}{2} \times \frac{7}{2}$

$= 49\pi$ sq.cm.

Total surface area of two equal hemispheres = $6\pi r^2$

$= 6 \times \pi \times \frac{7}{2} \times \frac{7}{2}$

$= 73.5\pi$ sq.cm

$\therefore$ Required increase = $(73.5\pi - 49\pi)$ sq.cm.

$= 24.5\pi$ sq.cm.

$= (24.5 \times \frac{22}{7})$ sq.cm.

= 77 sq.cm.

**54.** (4) Let the marked price be Rs. $x$

According to the question,

$(100 – 23)\%$ of $x = 1848$

$\Rightarrow \frac{x \times 77}{100} = 1848$

$\Rightarrow x = \frac{1848 \times 100}{77}$ = Rs. 2400

**55.** (4) $\frac{3}{5}P = \frac{7Q}{2} = \frac{7}{5}R$

$\Rightarrow \frac{P}{\frac{5}{3}} = \frac{Q}{\frac{2}{7}} = \frac{R}{\frac{5}{7}}$

$\Rightarrow P : Q : R = \frac{5}{3} : \frac{2}{7} : \frac{5}{7}$

$= \left(\frac{5}{3}\times 21\right) : \left(\frac{2}{7}\times 21\right) : \left(\frac{5}{7}\times 21\right)$

[ L.C.M. of 3, 7 and 7 = 21]

= 35 : 6 : 15

**56.** (3) 1 + 2 + 3 + .......+ $n$

$= \frac{n(n+1)}{2}$

$\therefore$ 1 + 2 + 3 +........ +93 = $\frac{93\times 94}{2}$

= 4371

$\therefore$ Required average = $\frac{4371}{93}$

= 47

**57.** (1) C.P. of article sold at loss

= Rs. $\left(\frac{400\times 100}{100-15}\right)$

= Rs. $\left(\frac{400\times 100}{85}\right)$

= Rs. $\left(\frac{8000}{17}\right)$ = Rs. 470.59

C.P. of article sold at profit

= Rs. $\left(\frac{400\times 100}{100+15}\right)$

= Rs. $\left(\frac{400\times 100}{115}\right)$

= Rs. 347.82

$\therefore$ Required loss = Rs. (470.59 + 347.82 – 800)

= Rs. (818.41– 800)

= Rs. 18.41

**58.** (1) Let the number be $x$.

According to the question,

(30–25)% of $x$ = 27

$\Rightarrow \frac{x\times 5}{100} = 27$

$\Rightarrow x = \frac{27\times 100}{5} = 540$

**59.** (2) Distance between 13 trees = 12 units.

Distance between the 13th and 37th trees = 24 units

$\because$ 12 units $\equiv$ 20 seconds

$\therefore$ 24 units $\equiv \frac{20}{12}\times 24 =$ 40 seconds

**60.** (2) Principal = Rs. $x$

S.I. = Rs. $x$

Time = 7 years 8 months

$= 7\frac{2}{3}$ years $= \frac{23}{3}$ years

$\therefore$ Rate $= \frac{\text{S.I.}\times 100}{\text{Principal}\times\text{Time}}$

$= \frac{x\times 100\times 3}{x\times 23} = \frac{300}{23}$

$= 13\frac{1}{23}$ % per annum

**61.** (2) Expression

$= \frac{1}{x^{p-q}+1} + \frac{1}{x^{q-p}+1}$

$= \frac{1}{\frac{x^p}{x^q}+1} + \frac{1}{\frac{x^q}{x^p}+1}$

$= \frac{1}{\frac{x^p+x^q}{x^q}} + \frac{1}{\frac{x^q+x^p}{x^p}}$

$= \frac{x^q}{x^p+x^q} + \frac{x^p}{x^q+x^p}$

$= \frac{x^q+x^p}{x^p+x^q} = 1$

**62.** (3) $x = 8 + 2\sqrt{15}$

$= 5 + 3 + 2 \times \sqrt{5} \times \sqrt{3}$

$= \left(\sqrt{5}\right)^2 + \left(\sqrt{3}\right)^2 + 2\times\sqrt{5}\times\sqrt{3}$

$= \left(\sqrt{5}+\sqrt{3}\right)^2$

$\therefore \sqrt{x} = \sqrt{5}+\sqrt{3}$

$\therefore \frac{1}{\sqrt{x}} = \frac{1}{\sqrt{5}+\sqrt{3}}$

$= \frac{\sqrt{5}-\sqrt{3}}{\left(\sqrt{5}+\sqrt{3}\right)\left(\sqrt{5}-\sqrt{3}\right)}$

$= \frac{\sqrt{5}-\sqrt{3}}{5-3} = \frac{\sqrt{5}-\sqrt{3}}{2}$

$\therefore \sqrt{x} + \frac{1}{\sqrt{x}}$

$= \sqrt{5}+\sqrt{3}+\frac{\sqrt{5}-\sqrt{3}}{2}$

$= \frac{2\sqrt{5}+2\sqrt{3}+\sqrt{5}-\sqrt{3}}{2}$

$= \frac{3\sqrt{5}+\sqrt{3}}{2}$

**63.** (2) Expression

$= \frac{1+a}{a^{\frac{1}{2}}+a^{\frac{-1}{2}}} - \frac{a^{\frac{1}{2}}+a^{\frac{-1}{2}}}{1+a} + a^{\frac{-1}{2}}$

$= \frac{1+a}{\sqrt{a}+\frac{1}{\sqrt{a}}} - \frac{\sqrt{a}+\frac{1}{\sqrt{a}}}{1+a} + \frac{1}{\sqrt{a}}$

$= \frac{\sqrt{a}(1+a)}{(a+1)} - \frac{a+1}{\sqrt{a}(1+a)} + \frac{1}{\sqrt{a}}$

$= \sqrt{a} - \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{a}} = \sqrt{a}$

**64.** (4) $\frac{p}{q} = \frac{x+3}{x-3}$

$\Rightarrow \frac{p^2}{q^2} = \frac{(x+3)^2}{(x-3)^2}$

By componendo and dividendo,

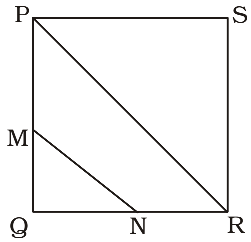
$\frac{p^2+q^2}{p^2-q^2} = \frac{(x+3)^2+(x-3)^2}{(x+3)^2-(x-3)^2}$

$\Rightarrow \frac{p^2+q^2}{p^2-q^2} = \frac{2\left(x^2+9\right)}{4\times x\times 3}$

$= \frac{x^2+9}{6x}$

[$\because (a+b)^2 + (a-b)^2 = 2(a^2+b^2)$ ; $(a+b)^2 - (a-b)^2 = 4ab$]

**65.** (4)




PQ = QR = $x$ cm

$\therefore$ MQ = $\frac{x}{2}$ cm; QN = $\frac{x}{3}$ cm.

Area of $\Delta$MQN = $\frac{1}{2}$ × QN× MQ

$\Rightarrow \frac{1}{2} \times \frac{x}{3} \times \frac{x}{2} = 48$

$\Rightarrow x^2 = 48 \times 12$

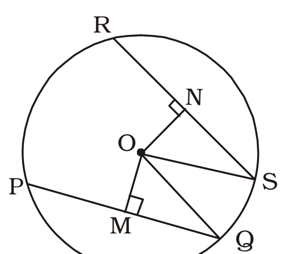
$\Rightarrow x = \sqrt{48 \times 12} = \sqrt{16 \times 3 \times 3 \times 4}$

$= 4 \times 3 \times 2 = 24$ cm.

Diagonal of square = PR

$= \sqrt{2} \times 24 = 24\sqrt{2}$ cm.

**66.** (3)




PQ = 30 ; OM $\perp$ PQ

$\Rightarrow$ PM = MQ = 15

OM = 12

$\therefore$ In $\Delta$OMQ,

OQ = $\sqrt{OM^2 + MQ^2}$

$= \sqrt{12^2 + 15^2}$

$= \sqrt{144 + 225} = \sqrt{369}$

NS = 12

OS = $\sqrt{369}$

In $\Delta$ONS,

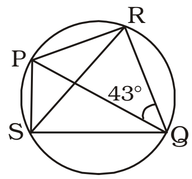
ON = $\sqrt{OS^2 - NS^2}$

$= \sqrt{369 - 12^2}$

$= \sqrt{369 - 144} = \sqrt{225}$

= 15

**67.** (3)




The angle in a semi-circle is a right angle.

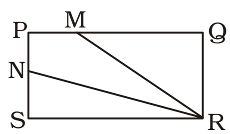
$\therefore \angle PSQ = 90°$

$\angle PQR = \angle PSR = 43°$

(Angles in the same segment)

$\therefore \angle QSR = 90° - 43° = 47°$

**68.** (2)




PQ = $3x$ cm.

PS = $3y$ cm.

NS = $2y$ cm.

MQ = $2x$ cm.

$\therefore$ Area of PQRS = $3x \times 3y = 9xy$ sq.cm.

$\therefore$ Area of $\Delta$NSR = $\frac{1}{2}$ × SR × NS

$= \frac{1}{2} \times 3x \times 2y = 3xy$ sq.cm.

Area of $\Delta$MQR = $\frac{1}{2}$ × MQ × QR

$= \frac{1}{2} \times 2x \times 3y$

= $3xy$ sq.cm.

According to the question,

$9xy - 3xy - 3xy = 17$

$\Rightarrow 3xy = 17$ sq.cm.

$\therefore$ Area of PQRS = $9xy$

= (3 × 17) sq. cm.

= 51 sq.cm.

**69.** (2) Expression

= (1– sinA. cosA) (sinA + cosA)

= ($\sin^2$A + $\cos^2$A – sinA.cosA) (sinA + cosA)

= $\sin^3$A + $\cos^3$A

$[a^3 + b^3 = (a + b)(a^2 + b^2 - ab)]$

**70.** (4) Expression

$= \sqrt{\frac{1 - \sin A}{1 + \sin A}}$

$= \sqrt{\frac{(1 - \sin A)(1 - \sin A)}{(1 + \sin A)(1 - \sin A)}}$

(Rationalising the denominator)

$= \sqrt{\frac{(1 - \sin A)^2}{1 - \sin^2 A}} = \sqrt{\frac{(1 - \sin A)^2}{\cos^2 A}}$

$= \frac{1 - \sin A}{\cos A}$

$= \frac{1}{\cos A} - \frac{\sin A}{\cos A} = \sec A - \tan A$

**71.** (2) Expression

$= \sqrt{\frac{1}{\sin^2 A} + \frac{1}{\cos^2 A}}$

$= \sqrt{\mathrm{cosec}^2 A + \sec^2 A}$

$= \sqrt{1 + \cot^2 A + 1 + \tan^2 A}$

$= \sqrt{\tan^2 A + \cot^2 A + 2}$

$= \sqrt{\tan^2 A + \cot^2 A + 2\tan A.\cot A}$

[$\because$ tanA.cotA =1]

$= \sqrt{(\tan A + \cot A)^2} = \tan A + \cot A$

**72.** (2) Required average = $\frac{1110}{13}$

= 85.38 ≈ 85

**73.** (3) It is obvious from the graph.

Percentage increase

$= \left(\frac{138 - 14}{14}\right) \times 100$

$= \frac{12400}{14} \approx 886\%$

**74.** (2) It is obvious from the graph.

**75.** (1) Total number of cars parked = 1110

∴ Total income = Rs. (1110 × 50) = Rs. 55500

**77.** (2) **Within** means inside or not further than a particular area or space.

**Look at the sentence :**

People who live **within** the city pay higher local taxes than people who live just outside the city.

Hence, seven floors and (with) a restaurant at the top within an ....... should be used here.

**78.** (3) **Seek (Verb)** = ask for something from someone; solicit; request.

**Look at the sentence :**

You may need to seek the advice of a specialist.

**79.** (1) Here, subject is My sister (singular). Hence, singular verb should be used.

**80.** (1) **Boisterous (Adjective)** = noisy; energetic and cheerful; high-spirited; lively; active; rough and stormy; clamorous.

**Look at the sentence :**

Her entire crew of sixteen men, after several hours in open boats on a boisterous sea, succeeded in getting ashore.

**81.** (1) **Haggard (Adjective)** = looking ill or tired, often with dark skin under the eyes; emaciated; looking exhausted and unwell.

**Look at the sentences :**

His illness had left its traces on his face which looked thin and haggard.

However she still retains the haggard facial features of a long-time addict.

**82.** (3) **Ostentation (Noun)** = too obviously showing your money, possessions or power; pretentiousness; excessive display.

**Modesty (Noun)** = humility; lack of pretension; fairness; freedom from boastfulness.

**Look at the sentences :**

She dresses stylishly without ostentation.

On the whole she had lived modestly, with a notable lack of ostentation.

She does a lot of work for charities, but her modesty forbids her from talking about it.

**83.** (3) **Commiserate (Verb)** = to express sympathy to someone about some bad luck; express sympathy for; condole.

**Indifferent (Adjective)** = having no particular sympathy or interest; apathetic about; impassive.

**Commiserative** is its Adjective form

**Look at the sentences :**

She went over to commiserate with Rose on her unfortunate circumstances.

People have become indifferent to the suffering of others.

**84.** (2) **Pillar to post** = one place to another.

**Look at the sentence :**

My parents were always on the move and so my childhood was spent being dragged from pillar to post.

**85.** (3) **Hobson's choice** = a choice of taking what is available or nothing at all; two options take it or leave it.

**Look at the sentence :**

It is a case of Hobson's choice because if I don't agree to their terms, I will lose my job.

**86.** (1) Here, **all the** should be used.

**Look at the sentences :**

Shakespeare is greater than all other dramatists.

Shakespeare is the greatest of all the dramatists.

**87.** (3) We use 'be used to + verbing' to talk about things that we are accustomed to or feel normal for us.

**90.** (2) **Hypocrisy (Noun)** = the practice of claiming to have higher standards than is the case; a situation in which someone pretends to believe something that they do not really believe.

**Look at the sentence :**

There is one rule for her and another rule for everyone else and it's sheer hypocrisy.

**91.** (1) **Precede (Verb)** = come before in order or position or time; go in advance of

**Proceed (Verb)** = move forward; begin.

**Recede (Verb)** = go back; lessen; decrease.

**Look at the sentences :**

Kofi Annan preceded Ban ki-moon as the Secretary - General of the UN.

Preparations for the festival are now proceeding smoothly.

The painful memories gradually receded in her mind.

**94.** (1) By whom + is /am /are + Subject + $V_3$ + object.

**99.** (1) **Inadequate (Adjective)** = insufficient ; not enough.

□□□

SET 17

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 12.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Mathematics : Formulas :: Chemistry : ?
(1) Reactions
(2) Organisms
(3) Theorems
(4) Gravity

**2.** In the following question, select the related letters from the given alternatives :
YONEX : DUUMG :: JASPO : ?
(1) OGZXX (2) OXXZF
(3) OZTYY (4) OZXXG

**3.** In the following question, select the related number from the given alternatives :
49 : 169 : : 66 : ?
(1) 126 (2) 132
(3) 144 (4) 162

**4.** In the following question, select the odd word from the given alternatives :
(1) Mobile
(2) Computer
(3) Fountain Pen
(4) Television

**5.** In the following question, select the odd letter-pair from the given alternatives :
(1) BN – P (2) GI – R
(3) LM – Y (4) TA – U

**6.** In the following question, select the odd number group from the given alternatives.
(1) (143, 64)
(2) (232, 49)
(3) (719, 289)
(4) (462, 169)

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Exacts 2. Exotic
3. Exactly 4. Exacerbate
5. Exhaust
(1) 43152 (2) 43251
(3) 53421 (4) 54312

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
FK27, LQ64, RW125, ?
(1) CX216 (2) XB216
(3) XC216 (4) YB343

**9.** In the following question, select the missing number from the given alternatives :
19, 11, 13, 16, 15, 17, 13, 19, 21, ?
(1) 10 (2) 11
(3) 12 (4) 15

**10.** Punit starting from point R walked straight 10 km west, then turned right and walked 12 km and again turned right and walked straight 7 km. In which direction is he from point R?
(1) North-East
(2) North-West
(3) South-East
(4) South-West

**11.** Ratio of present ages of P and Q is 9 : 4. The difference between their ages is 20 years. What will be the sum (in years) of their ages after 10 years?
(1) 62 (2) 66
(3) 72 (4) 76

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**REASONABLE**
(1) EASE (2) NOBLE
(3) SEASON (4) SOLAR

**13.** In a certain code language, "PUNISHED" is written as "288" and "TAILOR" is written as "225". How is "RELEASED" written in that code language?
(1) 207 (2) 237
(3) 225 (4) 243

**14.** In the following question, by using which mathematical operators will the expression become correct?
15 _ 3 _ 4 _ 20
(1) $\times$, $\div$ and $>$
(2) $\div$, $\times$ and $<$
(3) $\div$, $\times$ and =
(4) +, $\times$ and =

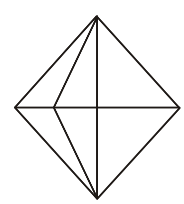
**15.** If 19 \$ 7 = 312 and 23 \$ 9 = 448, then
31 \$ 11 = ?
(1) 231 (2) 441
(3) 641 (4) 840

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives :

| 3 | 2 | 625 |
|---|---|---|
| 5 | 3 | 4096 |
| 4 | 2 | ? |

(1) 216 (2) 1024
(3) 1296 (4) 2024

**17.** How many triangles are there in the given figure ?



(1) 12 (2) 13
(3) 15 (4) 18

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

**Statements :**

I. All stars twinkle.

II. All satellites twinkle.

**Conclusions :**

I. Some stars are satellites.

II. Some stars twinkle.

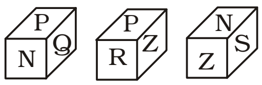
(1) Only Conclusion I follows.

(2) Only Conclusion II follows.

(3) Neither Conclusion I nor Conclusion II follows.

(4) Both Conclusions follow

**19.** Three positions of a cube are shown below. What will come opposite to face containing 'N'?

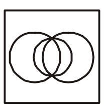
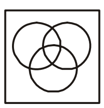


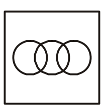
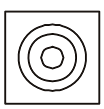

(1) P (2) Q

(3) S (4) R

**20.** Identify the diagram that best represents the relationship among the given classes.

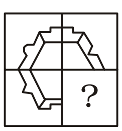
Country, State, City

(1)  (2) 

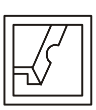
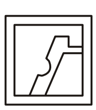
(3)  (4) 

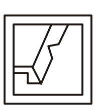
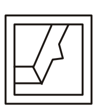
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



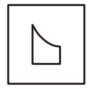

**Answer Figures :**

(1)  (2) 

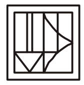
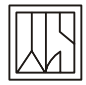
(3)  (4) 

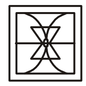
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



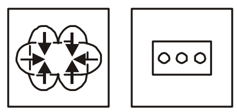
**Answer Figures :**

(1)  (2) 

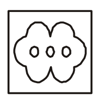
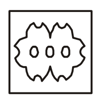
(3) (4) 

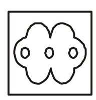
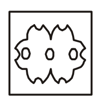
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Questions Figures :**



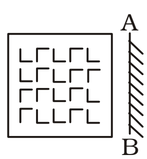
**Answerr Figures :**

(1)  (2) 

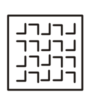
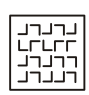
(3)  (4) 

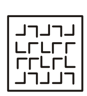
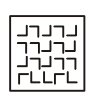
**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'L' can be represented by 22, 43 etc., and 'K' can be represented by 75, 97 etc. Similarly, you have to identify the set for the word "PACK".

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | C | L | A | Z | R |
| 1 | A | Z | C | R | L |
| 2 | Z | R | L | A | C |
| 3 | L | A | R | C | Z |
| 4 | R | C | Z | L | A |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | S | K | T | P | V |
| 6 | T | S | V | K | P |
| 7 | K | V | P | S | T |
| 8 | P | T | S | V | K |
| 9 | V | P | K | T | S |

(1) 69, 02, 12, 65

(2) 58, 23, 24, 76

(3) 77, 31, 34, 68

(4) 96, 44, 41, 97

## GENERAL AWARENESS

**26.** Which of the following pair/pairs is/are INCORRECT?

I. Golden revolution - Fruits production

II. Blue revolution - Increasing production of fertilizers

III. Yellow revolution - For the production of eggs

(1) Only I

(2) Only II

(3) Both I and II

(4) Both II and III

**27.** MTNL comes under which of the following category?

(1) Navratna

(2) Maharatna

(3) Mini Ratna

(4) None option is correct

**28.** Which of the following right has been removed from fundamental rights and converted to a simple legal right?
(1) Right to life and personal liberty
(2) Right to property
(3) Right to education
(4) Right to freedom of religion

**29.** Which of the following does not come under Fundamental Duty?
(1) To safe guard public property
(2) To protect and improve the natural environment
(3) To promote harmony
(4) To protect freedom of speech and expression

**30.** Which emperor wrote the play 'Nagananda' in Sanskrit language?
(1) Prabha karavardhana
(2) Harshav adhana
(3) Chan dragupta II
(4) Bindusara

**31.** Match the following.

| Social Reform | | Founder |
|---|---|---|
| 1. Arya Samaj | a. | Raja Ram Mohan Roy |
| 2. Brahmo Samaj | b. | Dayanand Saraswati |
| 3. Veda Samaj | c. | Atmaram Pandurang |
| 4. Prathna Samaj | d. | Keshab Chandra Sen and K. Sridharalu Naidu |

(1) 1-b , 2 -a, 3-c , 4-d
(2) 1-b , 2-a , 3-d , 4-c
(3) 1-a , 2-b , 3-d , 4-c
(4) 1-b , 2-d , 3-a , 4-c

**32.** The boundary between Earth's crust and mantle is _____.
(1) Mohod iscontinuity
(2) Lehmand iscontinuity
(3) Conrad discontinuity
(4) Gutenberg discontinuity

**33.** Doldrums pressure belts lies in between which of the following latitudes?
(1) 5° N to 5° S
(2) 35° to 60° N and S
(3) 25° to 35° N and S
(4) 35° to 45° N and S

**34.** Which component in tobacco makes it harmful for human consumption?
(1) Morphine
(2) Nicotine
(3) Heroin
(4) None of these

**35.** What is full form of BOD?
(1) Biological Oxygen Deficit
(2) Biological Oxygen Difference
(3) Biological Oxygen Demand
(4) Biological Oxygen Distribution

**36.** Alveoli is related to which of the following system of human body?
(1) Circulatory system
(2) Excretory system
(3) Reproductive system
(4) Respiratory system

**37.** What is the SI unit of intensity of sound?
(1) Decible (2) Newton
(3) Heartz (4) Tesla

**38.** Which colour is formed when Blue and Green are mixed?
(1) Cyan (2) Brown
(3) B lack (4) Violet

**39.** In computer terminology, what is the full form of FTP?
(1) Final Transfer Position
(2) File Transfer Position
(3) File Transfer Packet
(4) File Transfer Protocol

**40.** What is an exothermic reaction?
(1) Reaction in which heat is released.
(2) Reaction in which heat is absorbed.
(3) Reaction in which neither heat is released nor absorbed.
(4) None of these

**41.** What are the main components of Brass Alloy?
(1) Copper and Zinc
(2) Copper and Strontium
(3) Copper, Zinc and Nickel
(4) Copper and Nickel

**42.** Which among the following is national water animal of India?
(1) Crocodile
(2) Turtle
(3) Alligator
(4) Gangetic Dolphin

**43.** Pradhan Mantri Surakshit Matritwa Abhiyan provides facility of free health check-up and required treatment on _____ day of every month.
(1) 1st (2) 9th
(3) 15th (4) 30th

**44.** What was invented by J. B. Dunlop?
(1) Airplane
(2) Car
(3) Rubber Tyre
(4) Rubber Boot

**45.** At which of the following stadium Sachin Tendulkar scored his 100th international century?
(1) Wankhede Stadium
(2) Sher-e-Bangla Stadium
(3) Shahid Chandu Stadium
(4) Barabati Stadium

**46.** Who amongst the following is a renowned vocalist?
(1) Kaushalaya Reddy
(2) Manjit Bawa
(3) Raja Ravi Verma
(4) Pt. Jasraj

**47.** Which actress has been awarded with 64th National film Awards 2017?
(1) Surabhi CM
(2) Tapasee Pannu
(3) Trisha Krishnan
(4) Anushka Shetty

**48.** What is the name of the autobiography of Sachin Tendulkar?
(1) Numbers Do Lie
(2) Playing it my way
(3) Once upon a Time
(4) What is Remem bered

**49.** India recently notified the Third protocol to amend Double Taxation Avoidance Agreement with which of the following countries?
(1) China
(2) Vietnam
(3) Singapore
(4) Malaysia

**50.** Match the following

| Country | | Currency |
|---|---|---|
| 1. Bangladesh | a. | Ngultrum |
| 2. Mayamar | b. | Rufiyaa |
| 3. Maldives | c. | Taka |

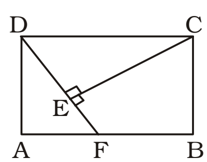
4. Bhutan d. Kyat
(1) 1-d, 2- c, 3-a, 4-b
(2) 1-b, 2-d, 3-a, 4-c
(3) 1-c, 2-d, 3-b, 4-a
(4) 1-c, 2-d, 3-a, 4-b

## QUANTITATIVE APTITUDE

**51.** If 56M4 is completely divisible by 11, then what is the value of M?
(1) 0 (2) 1
(3) 3 (4) 5

**52.** A and B can together do a piece of work in 10 days. If A works with twice of his efficiency and B works with an efficiency $\frac{1}{3}$rd less than his efficiency, then the work gets completed in 6 days. In how many days can A and B do the work separately respectively?
(1) $\frac{40}{3}$, 40 (2) $\frac{20}{3}$, 20
(3) 30, $\frac{20}{3}$ (4) $\frac{50}{3}$, 25

**53.** If the given figure, ABCD is a rectangle. F is a point on AB and CE is drawn perpendicular to DF. If CE = 60 cm and DF = 40 cm, then what is the area (in cm$^2$) of the rectangle ABCD?




(1) 1200 (2) 1800
(3) 2400 (4) 2800

**54.** What will be the net discount (in%) of two successive discounts of 15% and 35%?
(1) 44.75 (2) 51.25
(3) 55.25 (4) 56.25

**55.** A company, at the time of inflation reduced the staff in the ratio 5 : 3 and average salary per employee is increased in the ratio 7 : 8. By doing so, the company saved Rs. 55000. What was the initial expenditure (in Rs.) of company?
(1) 155000 (2) 160000
(3) 175000 (4) 215000

**56.** $a$, $b$ and $c$ are three values, such that $a + b = 5$, $b + c = 7.5$ and $c + a = 8.5$. What will be the average of these values?
(1) 1.5 (2) 3
(3) 3.5 (4) 4.5

**57.** Due to increase of 33.33% in the price of apples, a customer can purchase 4 apples less for Rs. 16. What is the original price (in paise) of an apple?
(1) 100 (2) 125
(3) 150 (4) $\frac{400}{3}$

**58.** Due to increase of $k$% in each side, the area of a square increases by 69%. What is the value of $k$ ?
(1) 30 (2) 33
(3) 34.5 (4) 35

**59.** A starts from a point at a speed of 30 metre/second. After 3 seconds, B starts chasing A from the same point with a speed of 50 metre/second. What will be the total distance (in metres) travelled by A and B before A is caught by B?
(1) 360 (2) 450
(3) 600 (4) 720

**60.** The difference between compound interest and simple interest on a sum for 2 years at 20% per annum is Rs. 200. If the interest is compounded half yearly, then what is the difference (in Rs.) between compound and simple interest for 1st year?
(1) 50 (2) 75
(3) 100 (4) 150

**61.** If $x(2x + 3) = 90$ and $7y^{-\frac{1}{2}} + 2y^{-\frac{1}{2}} = y^{\frac{1}{2}}$ ($x$ and $y$ are positive numbers), then what is the value of $(x^2 + y^2)$ ?
(1) 45 (2) 109
(3) 117 (4) 126

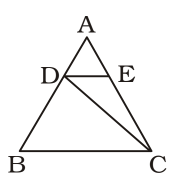
**62.** If $\frac{x}{y} = \frac{4}{9}$, then what is the value of $\frac{(7x^2 - 19xy + 11y^2)}{y^2}$ ?
(1) $\frac{59}{81}$ (2) $\frac{100}{27}$
(3) $\frac{319}{81}$ (4) $\frac{913}{81}$

**63.** If $x - 3 + \left[\frac{1}{(x-3)}\right] = 4$, what is the value of $(x-3)^3 + \left[\frac{1}{(x-3)^3}\right]$?
(1) 14 (2) 18
(3) 52 (4) 76

**64.** If $x^2 + y^2 + z^2 = xy + yz + zx$, then what is the value of $\frac{(7x + 3y - 5z)}{5x}$?
(1) 0 (2) 1
(3) 5 (4) $\frac{33}{5}$

**65.** The length of diagonal BD of a parallelogram ABCD is 36 cm. P and Q are the centroids of triangle ABC and triangle ADC respectively. What is the length (in cm.) of PQ?
(1) 6 (2) 9
(3) 12 (4) 18

**66.** In the given figure, DE | | BC and DE = $\frac{1}{3}$ BC. If area of triangle ADE = 20 cm$^2$, then what is the area (in cm$^2$) of triangle DEC?




(1) 40 (2) 60
(3) 80 (4) 120

**67.** If an equilateral triangle has side 12 cm, then what is the difference (in cm) between the circumradius and inradius?
(1) $2\sqrt{2}$ (2) $3\sqrt{2}$
(3) $2\sqrt{3}$ (4) $3\sqrt{3}$

**68.** If sum of the areas of the circumcircle and the incircle of an equilateral triangle is 770 cm$^2$, then what is the area (in cm$^2$) of the triangle?

(1) $125\sqrt{3}$ (2) $147\sqrt{3}$
(3) $156\sqrt{3}$ (4) $169\sqrt{3}$

**69.** What is the value of

$\sin\left(-\frac{\pi}{3}\right)+\cos\left(-\frac{\pi}{6}\right)$?

(1) 0 (2) 1
(3) 2 (4) 3

**70.** If θ is acute angle and $\tan\theta - \cot\theta = 0$, then what is the value of $\tan^{26}\theta + \cot^{100}\theta$?

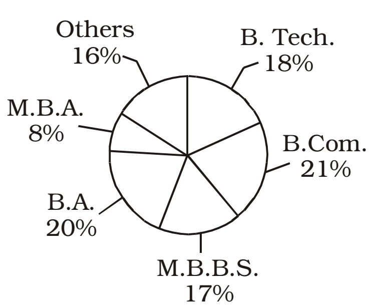
(1) –2 (2) 0
(3) 1 (4) 2

**71.** If $\sin 3\theta \sec 2\theta = 1$, then what is the value of $\left[3\tan^2\left(\frac{5\theta}{2}\right)-1\right]$?

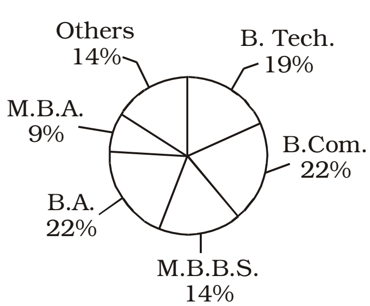
(1) 0 (2) 1
(3) 2 (4) 3

**Directions (72–75) :** The pie-chart-1 given below shows the segregation of 40000000 candidates who have filled the form of an examination. Pie-chart-2 shows the segregation of 35000000 candidates who were present in the examination. The segregation in both pie-charts has been done on the basis of their highest qualification.

**Pie-Chart-1**




**Pie-Chart-2**




**72.** If 18% of M.B.B.S. candidates who have filled the form are from XYZ University, then how many M.B.B.S. candidates from XYZ University have filled the form?

(1) 1512000
(2) 1224000
(3) 1440000
(4) None of these

**73.** What is the absolute difference in the B.Tech.'s who have filled the form and M.B.A.'s who were present in the examination?

(1) 3500000 (2) 3000000
(3) 4050000 (4) 4000000

**74.** 50% of others who have filled the form are B. Arch. and 45% of others who were present in the exam are B. Arch. How many B. Arch. candidates did not give the exam?

(1) 995000 (2) 685000
(3) 430000 (4) 756000

**75.** Which highest qualification accounts for most number of absentees?

(1) B.A.
(2) Others
(3) B.Com.
(4) None of these

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** If it would (1)/ rain, they will (2)/not come. (3)/ No Error (4)

**77.** Organic pulses are so popular today (1)/ that many people wonder (2)/ how they ever lived without them. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** My father did not approve ______ the plan of travelling to Uttarakhand because of bad weather there.

(1) of (2) one
(3) to (4) with

**79.** I settled ______ Canada last year.

(1) at (2) in
(3) off (4) on

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Abeyance**

(1) Commencement
(2) Perjure
(3) Condone
(4) Suspension

**81. Dauntless**

(1) Brave (2) Insane
(3) Playful (4) Ugly

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Clandestine**

(1) Abrupt (2) Illicit
(3) Open (4) Wary

**83. Intrepid**

(1) Greed (2) Kind
(3) Meek (4) Sigh

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To steal a march**

(1) To act in a foolish way
(2) To break something
(3) To outshine
(4) To see a hidden meaning

**85. In a jiffy**

(1) Fail to win appreciation
(2) In an appropriate manner
(3) Something that is done very quickly
(4) To fall in love

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86. (After he arrived)** from office, he goes to gym.

(1) After he had being arriving
(2) After he had arrived
(3) After he arrives
(4) No Improvement

**87.** When I first saw Ankit, he **(was playing)** cricket.
(1) had played
(2) had been playing
(3) played
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88 Mania for travel**
(1) Dromomania
(2) Hypomania
(3) Megalomania
(4) Nymphomania

**89. One who has suddenly gained new wealth, power or prestige**
(1) Egotist (2) Imposter
(3) Parvenu (4) Scullery

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Acquiescence
(2) Alienate (3) Belligerent
(4) Sabbotage

**91.** (1) Alluminium
(2) Cemetery
(3) Recommend
(4) Satellite

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. P.** It isn't bragging about how great you are.
**Q.** It's not about thinking you're perfect because nobody is but knowing that you're worthy of being loved and accepted.
**R.** Self esteem is how much you value yourself and how important you think you are.
**S.** It's how you see yourself and feel about your achievements.
(1) SQRP (2) RQSP
(3) RSPQ (4) SRQP

**93. P.** Most of them are combinations of hydrogen and carbon in varying proportions.
**Q.** Crude mineral oil comes out of the earth as a thick brown or black liquid with a strong smell.
**R.** It is a complex mixture of many different substances, each with its own individual qualities.
**S.** Such hydrocarbons are also found in other forms such as bitumen, asphalt and natural gas.
(1) QPRS (2) PQRS
(3) PQSR (4) QRPS

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**He shall have bought a car.**
(1) A car was being bought by him.
(2) A car was bought by him.
(3) A car will have been bought by him.
(4) A car would have been bought by him.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**The teacher said to the student, "Have you brought your lunch?"**
(1) The student was asked by the teacher about bringing his lunch.
(2) The teacher asked the student if he would be bringing his lunch .
(3) The teacher asked the student if he had brought his lunch.
(4) The teacher asked the student if he has brought his lunch.

**Directions (96–100) :** In the following questions, the sentences given with blank (numbered) are to be filled in with an appropriate word(s). Select the correct alternative out of the four.

Children need to be taught the importance of hygiene early on so that it becomes a **(96)**. Children are the most **(97)** to hygiene-related disorders like skin issues, rashes, infections, wounds, etc. Teach them early on about what to **(98)**. Teach them that taking a few **(99)** measures to prevent infections and diseases is **(100)**.

**96.** (1) kind (2) habit
(3) regular (4) need

**97.** (1) innocent
(2) responsible
(3) pliable
(4) susceptible

**98.** (1) avoid (2) read
(3) right (4) learn

**99.** (1) scientific
(2) precautionary
(3) unimportant
(4) insignificant

**100.** (1) optional (2) secondary
(3) voluntary (4) imperative

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (1) | **3.** (3) | **4.** (3) |
| **5.** (2) | **6.** (4) | **7.** (1) | **8.** (3) |
| **9.** (1) | **10.** (2) | **11.** (3) | **12.** (3) |
| **13.** (1) | **14.** (3) | **15.** (4) | **16.** (3) |
| **17.** (3) | **18.** (2) | **19.** (4) | **20.** (4) |
| **21.** (1) | **22.** (1) | **23.** (2) | **24.** (1) |
| **25.** (4) | **26.** (4) | **27.** (1) | **28.** (2) |
| **29.** (4) | **30.** (2) | **31.** (2) | **32.** (1) |
| **33.** (1) | **34.** (2) | **35.** (3) | **36.** (4) |
| **37.** (1) | **38.** (1) | **39.** (4) | **40.** (1) |
| **41.** (1) | **42.** (4) | **43.** (2) | **44.** (3) |
| **45.** (2) | **46.** (4) | **47.** (1) | **48.** (2) |
| **49.** (3) | **50.** (3) | **51.** (4) | **52.** (1) |
| **53.** (3) | **54.** (1) | **55.** (3) | **56.** (3) |
| **57.** (1) | **58.** (1) | **59.** (2) | **60.** (1) |
| **61.** (3) | **62.** (3) | **63.** (3) | **64.** (2) |
| **65.** (3) | **66.** (1) | **67.** (3) | **68.** (2) |
| **69.** (1) | **70.** (4) | **71.** (3) | **72.** (2) |
| **73.** (3) | **74.** (1) | **75.** (4) | **76.** (1) |
| **77.** (3) | **78.** (1) | **79.** (2) | **80.** (4) |
| **81.** (1) | **82.** (3) | **83.** (3) | **84.** (3) |
| **85.** (3) | **86.** (3) | **87.** (4) | **88.** (1) |
| **89.** (3) | **90.** (4) | **91.** (1) | **92.** (3) |
| **93.** (4) | **94.** (3) | **95.** (3) | **96.** (2) |
| **97.** (4) | **98.** (1) | **99.** (2) | **100.** (4) |

## EXPLANATIONS

**1.** (1) Mathematics is the abstract science of numbers, quantities and formulas. Similarly, Chemistry is the study of elements and compounds and their reactions.

**2.** (1)

Y O N E X
+5 +6 +7 +8 +9 ↓
D U U M G

Similarly,

J A S P O
+5 +6 +7 +8 +9 ↓
O G Z X X

**3.** (3) 49 ⇒ 4 + 9 = 13; $(13)^2 = 169$
Similarly,
66 ⇒ 6 + 6 = 12;
$(12)^2 = 144$

**4.** (3) Except fountain pen, all others are electronics products.

**5.** (2) B N = P
↓ ↓ ↓
2 + 14 = 16
L M = Y
↓ ↓ ↓
12 + 13 = 25
T A = U
↓ ↓ ↓
20 + 1 = 21
But,
G I = P
↓ ↓ ↓
7 + 9 = 16

**6.** (4) $(1 + 4 + 3)^2 = (8)^2 = 64$
$(2 + 3 + 2)^2 = (7)^2 = 49$
$(7 + 1 + 9)^2 = (17)^2 = 289$
But,
$(4 + 6 + 2)^2 = (12)^2$
$= 144 \neq 169$

**7.** (1) Arrangement of words as per dictionary :
4. Exacerbate
↓
3. Exactly
↓
1. Exacts
↓
5. Exhaust
↓
2. Exotic

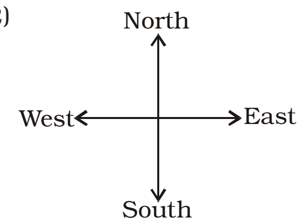
**8.** (3)

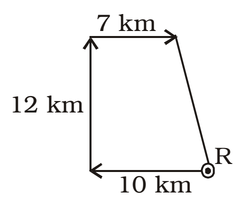
F $\xrightarrow{+6}$ L $\xrightarrow{+6}$ R $\xrightarrow{+6}$ X
K $\xrightarrow{+6}$ Q $\xrightarrow{+6}$ W $\xrightarrow{+6}$ C
27 → 64 → 125 → 216
↓ ↓ ↓ ↓
$(3)^3$ $(4)^3$ $(5)^3$ $(6)^3$

**9.** (1) There are three alternating series :

19 $\xrightarrow{-3}$ 16 $\xrightarrow{-3}$ 13 $\xrightarrow{-3}$ 10
11 $\xrightarrow{+4}$ 15 $\xrightarrow{+4}$ 19
13 $\xrightarrow{+4}$ 17 $\xrightarrow{+4}$ 21

**10.** (2)




It is clear from the diagram that now he is in North-West from point R.

**11.** (3) Let present ages of P and Q respectively are $9x$ and $4x$ years
According to question,
$9x - 4x = 20$
$\Rightarrow 5x = 20$
$\Rightarrow x = \frac{20}{5} = 4$
Now, $(9x + 10) + (4x + 10)$ years
$= 13x + 20$ years
$= 13 \times 4 + 20$ years
$= 52 + 20$ years
$= 72$ years

**12.** (3) There is only one 'S' in the given word. Therefore, the word SEASON cannot be formed.

R [E A S] O N A B L [E] ⇒ EASE

R E A S [O N] A [B L E] ⇒ NOBLE

[R] E [A S O] N A B [L] E
⇒ SOLAR

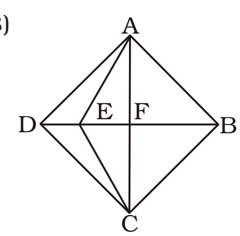
**13.** (1)(P + U + N + I + S + H + E + D) × 3
= (16 + 21 + 14 + 9 + 19 + 8 + 5 + 4) × 3
= 96 × 3 = 288
(T + A + I + L + O + R) × 3
= (20 + 1 + 9 + 12 + 15 + 18) × 3
= 75 × 3 = 225
Therefore,
(R + E + L + E + A + S + E + D) × 3
= (18 + 5 + 12 + 5 + 1 + 19 + 5 + 4) × 3
= 69 × 3 = 207

**14.** (3) 15 – 3 – 4 – 20
⇒ 15 ÷ 3 × 4 = 20
⇒ 5 × 4 = 20

**15.** (4) 19 $ 7 = 312
⇒ (19 + 7) × (19 – 7)
⇒ 26 × 12 = 312
23 $ 9 = 448
⇒ (23 + 9) × (23 – 9)
⇒ 32 × 14 = 448
Therefore,
31 $ 11 = ?
⇒ ? = (31 + 11) × (31 – 11)
⇒ ? = 42 × 20 = 840

**16.** (3) First Row
$(3 + 2)^4 = (5)^4 = 625$
Second Row
$(5 + 3)^4 = (8)^4 = 4096$
Third Row
$(4 + 2)^4 = (6)^4 = 1296$

**17.** (3)



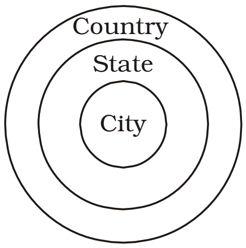

The triangles are :
Δ AED; Δ AEF; Δ AFD; Δ AFB; Δ CED; Δ CEF; Δ CFD; Δ CFB; Δ ECA; Δ DCA; Δ BAC; Δ ADB; Δ AEB; Δ CEB; Δ CBD
Thus, there are 15 triangles in the given figure.

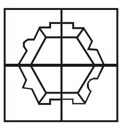
**18.** (2) Both the Premises are Universal Affirmative (A-type).

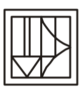
Conclusion II is the Implication of the first Premise.

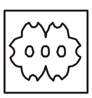
**19.** (4) P, Q, S and Z are on the faces adjacent to N. Therefore, R lies opposite N.

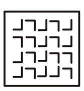
**20.** (4) City is included in the State and State is included in the Country.




**21.** (1) 

**22.** (1) 

**23.** (2) 

**24.** (1) 

**25.** (4) P = 58, 69, 77, 85, 96
A = 02, 10, 23, 31, 44
C = 00, 12, 24, 33, 41
K = 56, 68, 75, 89, 97

| Option | P | A | C | K |
|---|---|---|---|---|
| (1) | 69 | 02 | 12 | 65 |
| (2) | 58 | 23 | 24 | 76 |
| (3) | 77 | 31 | 34 | 68 |
| (4) | 96 | 44 | 41 | 97 |

**26.** (4) Blue revolution- Fishes production

- Yellow revolution-Oil seeds production

**27.** (1) Mahanagar Telephone Nigam was created by the Government of India in 1986 to oversee the telephone services of Delhi and Mumbai. It is one of the Navratana categories Company.

**28.** (2) The Indian Constitution does not recognize property right as a fundamental right. In the year 1977, the 44th amendment eliminated the right to acquire, hold and dispose of property as a fundamental right. However, in another part of the Constitution, Article 300 (A) was inserted to affirm that no person shall be deprived of his property save by authority of law.

**29.** (4) Article 19(1)(a) of Indian Constitution says that all citizens have the right to freedom of speech and expression. Freedom of Speech and expression means the right to express one's own convictions and opinions freely by words of mouth, writing, printing, pictures or any other mode. rticle 51 'A', contained in Part IV A of the Constitution deals with Fundamental Duties.

**30.** (2) King Harshavardhana was an emperor of Northern part of India. His capital was Kanauj. Harsha Vardhana also wrote three Sanskrit plays, namely Nagananda, Ratnavali and Priyadarsika. In 641 BC, he sent a mission to China, which helped in establishing the first diplomatic relations between China and India.

**31.** (2) Social Reform Movement-Founder

- Arya Samaj-Dayanand Saraswati
- Brahmo Samaj-Raja Ram Mohan Roy
- Veda Samaj-Keshab Chandra Sen and K. Sridharalu Naidu
- Prathna Samaj-Atmaram Pandurang

**32.** (1) The Mohorovicic Discontinuity, or 'Moho' is the boundary between the crust and the mantle. The discontinuity was named after Croatian seismologist and geophysicist Andrija Mohorovicic who pioneered its discovery in 1909 and explained the behavior and origin of earthquakes.

**33.** (1) The doldrums, usually located between 5° north and 5° south of the equator, are also known as the Intertropical Convergence Zone or ITCZ for short. The trade winds converge in the region of the ITCZ, producing convectional storms that produce some of the world's heaviest precipitation regions.

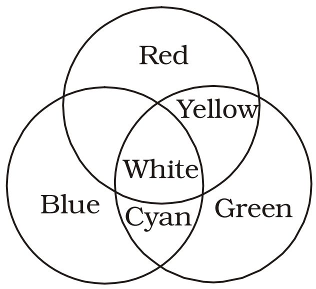
**34.** (2) Tobacco is a plant grown for its leaves, which are smoked, chewed, or sniffed. Tobacco contains a chemical called nicotine. Nicotine is an addictive substance.

**35.** (3) Biological Oxygen Demand, is a measurement of the amount of dissolved oxygen (DO) that is used by aerobic microorganisms when decomposing organic matter in water. It is an important water quality parameter because it provides an index to assess the effect discharged wastewater will have on the receiving environment.

**36.** (4) Alveoli are tiny sacs within our lungs that allow oxygen and carbon dioxide to move between the lungs and bloodstream. These alveoli are located at the ends of the air passageways in the lungs. They have very thin, wet walls and are surrounded with a network of small blood vessels, or capillaries. This allows gases to diffuse, or move across, the surface of the alveolus.

**37.** (1) Sound Intensity is the sound power per unit area, a sound energy quantity; the SI units are Watts/m2. The decibel is often used as a measure of the loudness of sound although strictly this is a logarithmic ratio between a measured signal and some reference and as such is used in all sorts of applications including electronics as a measure of signal gain.

**38.** (1)




**39.** (4) File Transfer Protocol (FTP) is the commonly used protocol for exchanging files over the Internet. FTP uses the Internet's TCP/IP protocols to enable data transfer. FTP uses a client-server architecture. FTP promotes sharing of files via remote computers with reliable and efficient data transfer.

**40.** (1) An exothermic reaction is a chemical reaction that releases energy by light or heat. It is the opposite of an endothermic reaction. In any chemical reaction, chemical bonds are either broken or formed. And the rule of thumb is "When chemical bonds are formed, heat is released, and when chemical bonds are broken, heat is absorbed.

**41.** (1) Brass is a metallic alloy that is made of copper and zinc. The proportions of zinc and copper can vary to create different types of brass alloys with varying mechanical and electrical properties. Brass has a higher malleability than either bronze or zinc.

**42.** (4) River Dolphin is the National Aquatic Animal of India. This mammal is also said to represent the purity of the holy Ganga as it can only survive in pure and fresh water. River dolphin is a critically endangered species in India and therefore, has been included in the Schedule I for the Wildlife (Protection) Act, 1972. The main reasons for decline in population of the species are poaching and habitat degradation due to declining flow, heavy siltation, construction of barrages causing physical barrier for this migratory species.

**43.** (2) The Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) is aimed to reduce maternal and infant mortality rates through safe pregnancies and safe deliveries. It will provide fixed day assured, comprehensive and quality antenatal care to pregnant women on the 9th of every month.

**44.** (3) In October 1887, John Boyd Dunlop developed the first practical pneumatic or inflatable tyre and developed them for use in cycle racing.

**45.** (2) Sachin Tendulkar became the first batsman to make a 100 international centuries, getting to the milestone against Bangladesh at the Shere Bangla stadium in Mirpur on March 16, 2012.

**46.** (4) Pandit Jasraj is an Indian classical vocalist. He belongs to the Mewati gharana of Hindustani classical music. Jasraj created a novel form of jugalbandi called Jasrangi that is styled on the ancient system of moorchhana, between a male and a female vocalist, who each sing different ragas at the same time

**47.** (1) 64th National Film Award winner :
Best Actor - Akshay Kumar (Rustom)
Best Actress - Surabhi Lakshmi (Minnaminungu)
Best Director - Rajesh Mapuskar (Ventilator)
Best Film on Social Issues - Pink

**48.** (2) Playing It My Way is the autobiography of former Indian cricketer Sachin Tendulkar. It was launched on 5 November 2014 in Mumbai. The book summarises Tendulkar's early days, his 24 years of international career and aspects of his life that have not been shared publicly.

**49.** (3) The Third Protocol amending India-Singapore Double Taxation Avoidance Agreement (DTAA) which was signed on 30th December, 2016, has come into force on 27th February 2017. It inserts Article 9(2) in the DTAA which would facilitate relieving of economic double taxation in transfer pricing cases.

**50.** (3)

| **Country** | **Currency** |
|---|---|
| ● Bangladesh | Taka |
| ● Myanmar | Kyat |
| ● Maldives | Rufiyaa |
| ● Bhutan | Ngultrum |

**51.** (4) 56M4 is exactly divisible by 11 if

$(6 + 4) - (5 + M) = 0$

$\Rightarrow 10 - 5 - M = 0$

$\Rightarrow 5 - M = 0 \Rightarrow M = 5$

**52.** (1) Let A complete the work in $x$ days and B complete the same work in $y$ days.

**Case I**

$$\frac{1}{x}+\frac{1}{y} = \frac{1}{10} \quad ..... \text{(i)}$$

**Case II**

$$\frac{2}{x}+\frac{2}{3y} = \frac{1}{6} \quad ..... \text{(ii)}$$

By equation (i) × 2 – (ii) we have

$$\frac{2}{x} + \frac{2}{y} - \frac{2}{x} - \frac{2}{3y} = \frac{1}{5} - \frac{1}{6}$$

$$\Rightarrow \frac{2}{y} - \frac{2}{3y} = \frac{6-5}{30} \Rightarrow \frac{6-2}{3y}$$

$$= \frac{1}{30}$$

$$\Rightarrow \frac{4}{3y} = \frac{1}{30} \quad y = \frac{30 \times 4}{3}$$

= 40 days

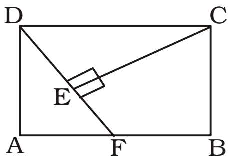
From equation (i)

$$\frac{1}{x} + \frac{1}{40} = \frac{1}{10} \Rightarrow \frac{1}{x}$$

$$= \frac{1}{10} - \frac{1}{40} = \frac{4-1}{40} \Rightarrow \frac{1}{x}$$

$$= \frac{3}{40} \Rightarrow x = \frac{40}{3} \text{ days}$$

**53.** (3)




In ΔDAF and ΔDEC,
∠EDC = ∠DFA
∠DAF = ∠CED
By AA-similarity
ΔDAF ~ ΔDEC

$\therefore \frac{DF}{DA} = \frac{DC}{CE}$

⇒ DA × CD = CE × DF
∴ Area of rectangle ABCD
= 60 × 40
= 2400 $cm^2$

**54.** (1) Net discount per cent

$= \left(x + y - \frac{xy}{100}\right)\%$

$= \left(15 + 35 - \frac{15 \times 35}{100}\right)\%$

= (50 – 5.25)%
= 44.75%

**55.** (3) Required ratio of total salary
= 5 × 7 : 3 × 8
= 35 : 24
Difference = 35 – 24 = 11
Initial expenditure of company

$= \text{Rs. } \left(\frac{35}{11} \times 55000\right)$

= Rs. (35 × 5000)
= Rs. 175000

**56.** (3) $a + b = 5$ ...... (i)
$b + c = 7.5$ ........ (ii)
$c + a = 8.5$ ........ (iii)
On adding all three equations
$a + b + b + c + c + a$
= 5 + 7.5 + 8.5
⇒ 2 $(a + b + c)$ = 21

$\Rightarrow a + b + c = \frac{21}{2}$

$\therefore \text{Average} = \frac{21}{2 \times 3} = \frac{7}{2} = 3.5$

**57.** (1) Let original price of an apple be $x$ paise.
Price of an apple due to 33.33% increase

$= x \times \left(\frac{100 + \frac{100}{3}}{100}\right) \text{ Paise}$

$= \frac{4x}{3} \text{ Paise}$

According to the question,

$\Rightarrow \frac{1600}{x} - \frac{1600}{\frac{4x}{3}} = 4$

$\Rightarrow \frac{1600}{x} - \frac{4800}{4x} = 4$

$\Rightarrow \frac{1600}{x} - \frac{1200}{x} = 4$

$\Rightarrow x = \frac{400}{4} = 100 \text{ paise}$

**58.** (1) Increase in area of square

$= \left(k + k + \frac{k^2}{100}\right)\%$

According to the question,

$\Rightarrow 2k + \frac{k^2}{100} = 69$

$\Rightarrow k^2 + 200k - 6900 = 0$
$\Rightarrow k^2 + 230k - 30k - 6900 = 0$
$\Rightarrow k(k + 230) - 30(k + 230) = 0$
$\Rightarrow (k - 30)(k + 230) = 0$
$\Rightarrow k = 30$ as $k \neq -230$

**OR**

$2k + \frac{k^2}{100} = 69$

If $k = 30$

$\text{L.H.S.} = 2 \times 30 + \frac{30 \times 30}{100}$

= 60 + 9 = 69

**59.** (2) Distance covered by A in 3 seconds = 3 × 30 = 90 metre
Relative speed
= (50 – 30) metre/second
= 20 metre/second

$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$

$= \left(\frac{90}{20}\right) \text{ seconds}$

$= \frac{9}{2} \text{ seconds}$

Distance covered by A in $\left(\frac{9}{2} + 3\right)$ seconds

$= \left(\frac{9}{2} + 3\right) \times 30$

$= \left(\frac{15}{2} \times 30\right) \text{ metre}$

= 225 metre
Distance covered by B

$= \frac{9}{2} \times 50 = 225 \text{ metre}$

Total distance
= 225 + 225 = 450 metre

**60.** (1) Principal

$= \text{Difference} \times \frac{(100^2)}{(\text{Rate}^2)}$

$= 200 \times \frac{(100)^2}{(20)^2}$

$= \frac{200 \times 100 \times 100}{20 \times 20} = \text{Rs. } 5000$

If interest is compounded half yearly

$A = 5000 \left(1 + \frac{10}{100}\right)^2$

$= 5000 \times \frac{110}{100} \times \frac{110}{100} = 6050$

C.I. = Rs. (6050 – 5000)
= Rs. 1050

$\text{S.I.} = \frac{P \times R \times T}{100}$

$= \frac{5000 \times 10 \times 2}{100} = \text{Rs. } 1000$

Difference = Rs. (1050 – 1000)
= Rs. 50

**61.** (3) $x(2x + 3) = 90$
$\Rightarrow 2x^2 + 3x - 90 = 0$
$\Rightarrow 2x^2 + 15x - 12x - 90 = 0$

$\Rightarrow x(2x + 15) - 6(2x + 15) = 0$

$\Rightarrow (2x + 15)(x - 6) = 0 \Rightarrow x - 6 = 0$

$\Rightarrow x = 6$

$\therefore 7y^{-\frac{1}{2}} + 2y^{-\frac{1}{2}} = y^{\frac{1}{2}}$

$\Rightarrow \frac{7}{y^{\frac{1}{2}}} + \frac{2}{y^{\frac{1}{2}}} = y^{\frac{1}{2}}$

$\Rightarrow y^{\frac{1}{2}} \times y^{\frac{1}{2}}$

$= 7 + 2$

$\Rightarrow y = 9$

$\therefore x^2 + y^2 = 6^2 + 9^2$

$= 36 + 81 = 117$

**62.** (3) $\frac{7x^2 - 19xy + 11y^2}{y^2}$

$= \frac{7x^2}{y^2} - 19\frac{x}{y} + 11$

$= 7\left(\frac{x}{y}\right)^2 - 19 \times \frac{x}{y} + 11$

$= 7 \times \left(\frac{4}{9}\right)^2 - 19 \times \frac{4}{9} + 11$

$= \frac{112}{81} - \frac{76}{9} + 11$

$= \frac{112 - 684 + 891}{81} = \frac{319}{81}$

**63.** (3) $(x - 3)^3 + \frac{1}{(x-3)^3}$

$= \left[(x-3) + \frac{1}{x-3}\right]^3 - 3(x - 3)$

$\times \frac{1}{x-3}\left[(x-3) + \frac{1}{x-3}\right]$

$= (4)^3 - 3(4)$

$= 64 - 12$

$= 52$

**64.** (2) $x^2 + y^2 + z^2 = xy + yz + zx$

$\Rightarrow 2(x^2 + y^2 + z^2) = 2(xy + yz + zx)$

$\Rightarrow 2x^2 + 2y^2 + 2z^2 - 2xy - 2yz - 22x = 0$

$\Rightarrow (x - y)^2 + (y - z)^2 + (z - x)^2 = 0$

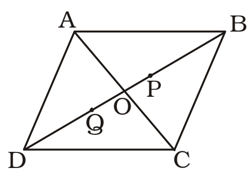
$\Rightarrow x = y = z$ [If $a^2 + b^2 + c^2 = 0$

$\Rightarrow a = b = c = 0$]

$\therefore \frac{7x + 3y - 5z}{5x} = \frac{7x + 3x - 5x}{5x}$

$= \frac{5x}{5x} = 1$

**65.** (3)




AC and BD bisect each other at O.

$OD = OB = \frac{36}{2} = 18$ cm.

P and Q both lie on BD.

In $\Delta ABC$, P is centroid.

$\therefore \frac{BP}{PO} = \frac{2}{1} \Rightarrow BP = 2k;$

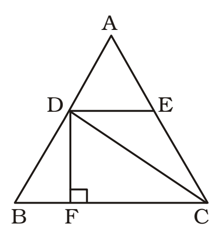
$PO = k$.

$\therefore 3k = 18 \Rightarrow k = 6$

$\therefore OP = OQ = 6$ cm.

$\Rightarrow PQ = 6 + 6 = 12$ cm.

**66.** (1)




DE || BC

$\therefore \angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA-similarity

$\Delta ADE \sim \Delta ABC$

$\frac{ar(\Delta ADE)}{ar(\Delta ABC)} = \left(\frac{DE}{BC}\right)^2 = \left(\frac{1}{3}\right)^2$

$\frac{20}{ar(\Delta ADE) + ar(\Delta DEC) + ar(\Delta DBC)}$

$= \frac{1}{9}$

$\Rightarrow 20 + ar(\Delta DEC) + ar(\Delta DBC) = 180$

$\Rightarrow ar(\Delta DEC) + ar(\Delta DBC) = 160$

$\Rightarrow \frac{1}{2} \times DE \times DF + \frac{1}{2} \times BC \times DF = 160$

$\Rightarrow DE \times DF + 3DE \times DF = 320$

$\Rightarrow 4DE \times DF = 320$

$\Rightarrow DE \times DF = 80$

$ar(\Delta DEC) = \frac{1}{2} \times DE \times DF$

$= \frac{1}{2} \times 80 = 40\ cm^2$

**67.** (3) Side of equilateral triangle $= a = 12$ cm.

Circum radius $= \frac{a}{\sqrt{3}}$

$= \frac{12}{\sqrt{3}} = 4\sqrt{3}$ cm.

Inradius

$= \frac{a}{2\sqrt{3}} = \frac{12}{2\sqrt{3}}$

$= 2\sqrt{3}$ cm.

Difference $= (4\sqrt{3} - 2\sqrt{3})$ cm.

$= 2\sqrt{3}$ cm.

**68.** (2) Ex-radius $= \frac{a}{\sqrt{3}}$ cm.

In-radius $= \frac{a}{2\sqrt{3}}$ cm.

Sum of areas of circum circle and incircle = 770

$\Rightarrow \pi R^2 + \pi r^2 = 77$

$\Rightarrow \frac{22}{7}\left[\frac{a^2}{3}\right] + \frac{22}{7}\left(\frac{a^2}{12}\right)$

$= 770$

$\Rightarrow \frac{22}{7}\left(\frac{a^2}{3} + \frac{a^2}{12}\right) = 770$

$\Rightarrow \left(\frac{49^2 + a^2}{12}\right) = \frac{770 \times 7}{22}$

$= 245$

$\Rightarrow 5a^2 = 12 \times 245$

$\Rightarrow a^2 = \frac{12 \times 245}{5} = 588$

Area of equilateral triangle

$= \frac{\sqrt{3}}{4} \times a^2$

$= \frac{\sqrt{3}}{4} \times 588 = 147\sqrt{3}\ \text{cm}^2$

**69.** (1) $\sin\left(-\frac{\pi}{3}\right) + \cos\left(\frac{-\pi}{6}\right)$

$= -\sin\frac{\pi}{3} + \cos\frac{\pi}{6}$

$= -\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} = 0$

**70.** (4) $\tan\theta - \cot\theta = 0$

$\Rightarrow \tan\theta = \cot\theta = \tan(90° - \theta)$

$\Rightarrow \theta = 90° - \theta$

$\Rightarrow 2\theta = 90°$

$\Rightarrow \theta = 45°$

$\Rightarrow \tan\theta = \cot\theta = 1$

$\therefore \tan^{26}\theta + \cot^{100}\theta$

$= (1)^{26} + (1)^{100}$

$= 1 + 1 = 2$

**71.** (3) $\sin 3\theta \sec 2\theta = 1$

$\Rightarrow \sin 3\theta = \frac{1}{\sec 2\theta}$

$\Rightarrow \sin 3\theta = \cos 2\theta = \sin(90° - 2\theta)$

$\Rightarrow 3\theta = 90° - 2\theta$

$\Rightarrow 5\theta = 90° \Rightarrow \theta = \frac{90}{5} = 18°$

$\therefore 3\tan^2\left(\frac{5\theta}{2}\right) - 1$

$= 3\tan^2\left(\frac{5 \times 18°}{2}\right) - 1$

$= 3\tan^2 45° - 1$

$= 3 - 1$

$= 2$

**72.** (2) Number of M.B. B. S students who have filled the form = 17% of 40000000

$= 40000000 \times \frac{17}{100}$

= 6800000

Number of students of XYZ University = 18% of 6800000

$= \frac{6800000 \times 18}{100}$

= 1224000

**73.** (3) Number of B. Tech. students who have filled the form = 18% of 40000000

= 7200000

Number of M.B.B.S. Students who have appeared in examination

= 9% of 35000000

= 3150000

Difference

= 7200000 – 3150000

= 4050000

**74.** (1) Other students who have filled the form

= 16% of 40000000

$= 40000000 \times \frac{16}{100}$

= 6400000

Number of B. Arch. students who have filled the form

= 50% of 6400000

= 3200000

Number of other students who appeared in the examination

= 14% of 35000000

= 4900000

Number of B. Arch students, who appeared in examination

= 45% of 4900000

= 2205000

Number of B. Arch students who did not appear in examination

= 3200000 – 2205000

= 995000

**75.** (4) Absentees in B.A.

$= \frac{40000000 \times 20}{100} - \frac{35000000 \times 22}{100}$

= 8000000 – 7700000

= 300000

Absentees in others

$= \frac{40000000 \times 16}{100} - \frac{35000000 \times 14}{100}$

= 6400000 – 4900000

= 15,00000

Absentees in B.Com.

$= \frac{40000000 \times 21}{100} - \frac{35000000 \times 22}{100}$

= 8400000 – 7700000

= 700000

Absentees in B. Tech.

$= \frac{40000000 \times 18}{100} - \frac{35000000 \times 19}{100}$

= 7200000 – 6650000

= 550,000

Absentees in M.B.A.

$= \frac{40000000 \times 8}{100} - \frac{35000000 \times 9}{100}$

= 3200000 – 3150000

= 50,000

Absentees in M.B.B.S.

$= \frac{40000000 \times 17}{100} - \frac{35000000 \times 14}{100}$

= 6800000 – 4900000

= 1900000

∴ The most number of absentees are in M.B.B.S.

**Note :** Percentage of applicants of others and MBBS students and their respective presence in exams has increased. You can calculate for only these two pairs.

**76.** (1) It is a future conditional.

If clause → contains Simple Present Tense

Other (principal) clause → contains Simple Future Tense

Correct expression → If it does rain, they...

If clause + Subject + Simple Present Tense, subject +Simple Future Tense

**77.** (3) Use 'they would ever live' in place of 'they ever lived'.

**Look at the sentence :**

I wonder how I would look like with a six pack.

They wonder how they would survive without their father.

I wonder → I ask myself

Here, **Correct expression** — how they would ever live... should be used.

**78.** (1) **Approve of (Phrasal verb)** = to agree to something, often in an ethical, religious or moral sense.

**Look at the sentence :**

I approved of what she said.

**Approve (Verb)** — to grant official consent to something

I approve your plan/project.

**79.** (2)

Preposition (in) — used for referring to a big area.

Preposition (at) — used for referring to a small area.

As Canada is a big country, so 'in' is apt and appropriate.

**Look at the sentences :**

I live in New Delhi at Rohini.

I live in Rohini at Sector 18.

**80.** (4) **Abeyance/suspension (Noun)** = a state of dormancy

**Look at the sentence :**

Matters were held in abeyance.

**Condone (Verb.)** = disregard; take no account of.

**Perjure (Verb.)** = lie under oath; forswear.

**Commencement (Noun)** = start; beginning

**81.** (1) **Dauntless/brave (Adjective)** = courageous; fearless

Dauntless bravery.

**Insane (Adjective)** = mentally ill; mad.

**Playful (Adjective)** = frisky; jolly; fun-loving.

**Ugly (Adjective)** = unattractive; ill-favoured.

**82.** (3) **Illicit/clandestine (Adjective)** = dishonest; illegal.

Some clandestine meetings took place.

**Open (Adjective)** = not closed; not shut

Open discussion/meetings.

**Wary (Adjective)** = cautious; careful.

**Abrupt (Adjective)** = sudden; instantaneous.

**83.** (3) **Intrepid (Adjective)** = fearless; courageous

Our interpid reporter.

**Meek (Adjective)** = obedient; patient

**Look at the sentence :**

She brought her meek little husband along.

**Kind (Adjective)** = generous; benevolent.

**Greed (Noun)** = avarice; rapacity

**Sigh (Verb)** = breathe out; exhale

**84.** (3) **to outshine**

**Look at the sentence :**

Our rival company managed to steal a march on us by bringing out their software ahead of ours.

**85.** (3) **something that is done very quickly**.

**Look at the sentence :**

They left the party in a jiffy.

**Jiffy (Noun)** = a very short time; a moment.

**86.** (3) As regular routine is evident, present simple should be used.

After = followed by a clause either in past perfect tense, Present Perfect tense or simple present tense (depending upon the context).

After he has arived from office he goes to gym.

After he arrives from office, he goes to gym.

After the patient had died, the doctor came.

**88.** (1) **Hypomania (Noun)** = a mild form of mania, marked by elation.

**Megalomania (Noun)** = grandiosity; self-importance

**Nymphomania (Noun)** = uncontrollable sexual desire in a woman.

**89.** (3) **Egotist (Noun)** = self-seeker; self-admirer.

**Imposter (Noun)** = imperssonator; pretender

**Scullery (Noun)** = a small kitchen/room at the back of a house.

**90.** (4) correction spelling is : Sabodage (= deliberately damage).

**91.** (1) Correct spelling – aluminium

**94.** (3) A car will have been bought by him.

It is active voice containing a modal verb (shall) and an auxiliary verb (have). Its passive voice is formed as follows:

Subject + modal verb + auxiliary verb + been + $V_3$ + by + Object.

**Look at the sentence :**

⇒ This work will have been done by him by evening.

**95.** (3) The teacher asked the student if he had brought his lunch.

It is direct speech of an interrogative sentence. Its indirect speech is formed as follows :

⇒ connector if/whether is used

⇒ said to changes to asked or enquired

⇒ Present perfect tense changes to past perfect tense.

⇒ Pronouns change as per $\frac{\text{SON}}{123}$

⇒ The interrogative sentence changes to the assertive sentence.

**96.** (2) **Habit (Noun)** = practice; custom; pattern; routine.

**97.** (4) **Susceptible (Adjective)** = open to; receptive to Vulnerable to, Vulnerable to

**Innocent (Adjective)** = guiltless; guilt-free

**Responsible (Adjective)** = in charge of ; at the helm of.

**Pliable (Adjective)** = flexible; supple

'Susceptible is often followed by preposition **(to)**.

**98.** (1) **Avoid (Verb)** = keep away from ; stay away from.

**Read (Verb)** = peruse; study; go through.

**Right (Verb)** = goodness; virtue

**Learn (Verb)** = gain an understanding of; grasp; master.

**99.** (2) **Precautionary (Adjective)** = preventive; protective.

**Scientific (Adjective)** = technical; factual; knowledge-based

**Unimportant/insignificant (Adjective)** = useless; meaningless

**100.** (4) **Imperative (Adjective)** = of vital importance; crucial.

**Voluntary/optional/secondary (Adjective)** = subordinate; ancillary; subsidiary; additional.

❑❑❑

# SET 18

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 12.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :

Bark : Dog : : ? : Sparrow

(1) Grunt (2) Snort
(3) Howl (4) Chirp

**2.** In the following question, select the related letters from the given alternatives :

ELQZ : AJOV : : VXTD : ?

(1) GWXE (2) WGCE
(3) XWGE (4) WCDE

**3.** In the following question, select the related number from the given alternatives :

40 : 100 : : 56 : ?

(1) 140 (2) 112
(3) 118 (4) 148

**4.** In the following question, select the odd word from the given alternatives :

(1) Book
(2) Pen
(3) Pencil
(4) Wax Colours

**5.** In the following question, select the odd letter group from the given alternatives :

(1) AZF (2) LOQ
(3) EVJ (4) ZAC

**6.** In the following question, select the odd number–pair from the given alternatives :

(1) 41 – 22 (2) 63 – 93
(3) 82 – 44 (4) 83 – 64

**7.** Arrange the given words in the sequence in which they occur in the dictionary :

1. Cadartrally
2. Caddisflies
3. Caducities
4. Caddisworms
5. Cadetships

(1) 12453 (2) 12534
(3) 21345 (4) 45213

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series :

ACE, FHJ, KMO, ?

(1) QRS (2) PRT
(3) PRU (4) QRV

**9.** In the following question, select the missing number from the given series :

9, 18, 72, 576, ?

(1) 8116 (2) 8216
(3) 9016 (4) 9216

**10.** Poonam told Akshay that "Yesterday she defeated Akshay's only sister's daughter Sneha in a school Taekwondo competition." How is Akshay related to Sneha?

(1) Grandfather
(2) Father
(3) Cousin
(4) Uncle

**11.** In a row of boys, Tarak is 18th from either end. How many boys are there in the row?

(1) 19 (2) 36
(3) 35 (4) 42

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.

**ABSOLUTE**

(1) BASE (2) BOSE
(3) LOSE (4) SOLVE

**13.** In a certain code language, "OPTIMIST" is written as "LKRNRGHG". How is "PESSIMIST" written in that code language?

(1) HGRNRVKHH
(2) HHRNRVKHG
(3) VKRNRHGHH
(4) KVRNRHHHG

**14.** In the following question, correct the equation by interchanging two signs.

4 – 10 × 5 + 9 ÷ 3 = 51

(1) × and – (2) ÷ and ×
(3) + and – (4) – and ÷

**15.** If 12 (20) 16 and 21 (35) 28, then what is value of A in 48 (80) A ?

(1) 50 (2) 56
(3) 64 (4) 72

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives :

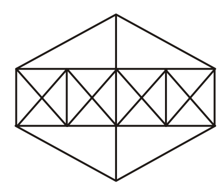
| 8 | 6 |
|---|---|
| 96 | 2 |

| 15 | 2 |
|---|---|
| 60 | 2 |

| ? | 5 |
|---|---|
| 120 | 6 |

(1) 3 (2) 4
(3) 8 (4) 14

**17.** How many triangles are there in the given figure ?



(1) 38 (2) 44
(3) 46 (4) 54

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

**Statements :**

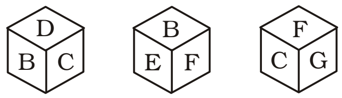
I. All dens are spirals.
II. Some spirals are cards.

**Conclusions :**

I. Some spirals are not cards.
II. Some dens are not cards.
III. Some cards are dens.

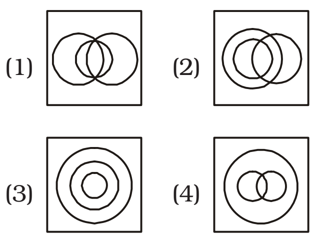
(1) Only Conclusion I and Conclusion II follow.
(2) Only Conclusion III follows.
(3) All Conclusions follow.
(4) No Conclusion follows.

**19.** Three positions of a cube are shown below. What will come opposite to face containing 'B'?

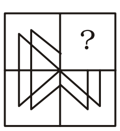



(1) C (2) D
(3) F (4) G

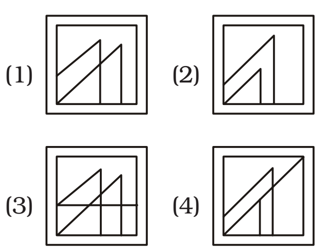
**20.** Identify the diagram that best represents the relationship among the given classes.
Professionals, Chartered Accountant, Female



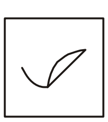
**21.** Which answer figure will complete the pattern in the question figure?
**Question Figure :**



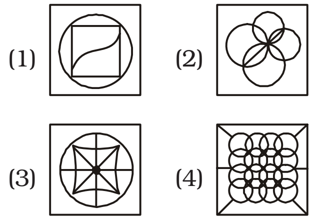

**Answer Figures :**



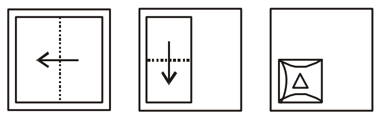
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.
**Question Figure :**



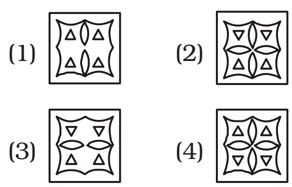
**Answer Figures :**



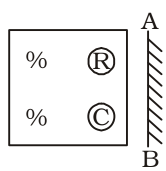
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?
**Question Figures :**



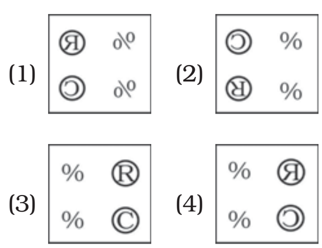
**Answer Figures :**



**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?
**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'R' can be represented by 23, 31 etc and 'O' can be represented by 75, 98 etc. Similarly, you have to identify the set for the word **'TRAY'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | T | Z | Y | B | R |
| 1 | Y | B | R | T | Z |
| 2 | Z | T | B | R | Y |
| 3 | B | R | Z | Y | T |
| 4 | R | Y | T | Z | B |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | A | O | U | E | I |
| 6 | U | E | I | A | O |
| 7 | O | A | E | I | U |
| 8 | E | I | O | U | A |
| 9 | I | U | A | O | E |

(1) 00, 04, 68, 02
(2) 21, 41, 97, 41
(3) 34, 12, 55, 11
(4) 42, 23, 89, 23

## GENERAL AWARENESS

**26.** Which among the following is not an instrument of fiscal policy?
(1) Taxation
(2) Public expenditure
(3) Public debt
(4) Credit Rationing

**27.** Which of the following equation is/are INCORRECT?
I. NI = NDP + Net Foreign Income
II. GNP = GDP + Net Foreign Incom e
III. NDP = GNP – Depreciation
(1) Only I and II
(2) Only III
(3) Only II and III
(4) Only II

**28.** Comptroller and Auditor General of India is appointed for how many years?

(1) 2 (2) 4
(3) 6 (4) 5

**29.** Who is the custodian of Contingency Fund of India?
(1) The Prime Minister
(2) Judge of Supreme Court
(3) The President
(4) The Finance Minister

**30.** Who was the first female emperor of India?
(1) Noor Jahan
(2) Razia Sultana
(3) Rani Rudrama Devi
(4) Queen Didda

**31.** Who was the first Governor General of India?
(1) Lord William Bentick
(2) Lord Dalhousie
(3) Lord Cornwallis
(4) None of these

**32.** Which of the following planet is also known as 'Earth's twin'?
(1) Mercury (2) Venus
(3) Jupiter (4) Saturn

**33.** Which of the following imaginary lines join places with same level of rainfalls?
(1) Contour lines
(2) Isobaths lines
(3) Isohyets lines
(4) Isobar lines

**34.** What is study of fungus known as?
(1) Physiology (2) Phrenology
(3) Mycology (4) Biology

**35.** Which of the following bacteria is responsible for the formation of curd?
(1) Lycopodium
(2) Yeast
(3) Lacto-bacillus
(4) Fungus

**36.** How many pairs of ribs are there in human body?
(1) 13 (2) 11
(3) 12 (4) 14

**37.** When a ball is thrown vertically upwards, which of the following quantities remains constant during its motion?
(1) Energy
(2) Displacement
(3) Velocity
(4) Acceleration

**38.** What is the SI unit of heat energy?
(1) Joule (2) Newton
(3) Calorie (4) Kelvin

**39.** Which system is used by the Digital Computers to encode data and Programs?
(1) Decimal
(2) Binary
(3) Hexa decimal
(4) Octal

**40.** What is the common name of Sodium Bicarbonate?
(1) Baking Soda
(2) Washing Powder
(3) Plaster of Paris
(4) Fly Ash

**41.** Which of the following is an ore of iron?
(1) Dolomite
(2) Epsom Salt
(3) Siderite
(4) Galena

**42.** Which of the following has maximum bio-diversity?
(1) Desert
(2) River
(3) Polar Region
(4) Tropical Region

**43.** Who will be implementing the Varishtha Pension Bima Yojana scheme during financial year 2017-18?
(1) Nationa l Insurance Company Limited
(2) New India Assurance Company Limited
(3) Life Insurance of Corporation of India
(4) SBI Life Insurance Company Limited

**44.** Albert Sabin is known for developing _____.
(1) smallpox vaccine
(2) polio vaccine
(3) penicillin
(4) hepatitis B vaccine

**45.** Math the following

| Term | Associated sport |
|---|---|
| 1. No ball | a. Hockey |
| 2. Goal | b. Cricket |
| 3. Knockout | c. Boxing |

Options:
(1) 1-b, 2- a, 3-c
(2) 1-c, 2-a, 3-b
(3) 1-b, 2-c, 3-a
(4) 1-c, 2-b, 3-a

**46.** Who amongst the following is a renowned Indian classical dancer?
(1) Palghat Mani Iyer
(2) Madhumati
(3) Sonal Mansingh
(4) Siddheshwari Devi

**47.** Who among the following did not receive the 2016 Arjuna award in the field of 'wrestling'?
(1) Virender Singh
(2) Vinesh Phogat
(3) Amit Kumar
(4) Rajat Chauhan

**48.** Who has written the book 'The Ministry of Utmost Happiness?
(1) Chaitanya Padukone
(2) Amitav Ghosh
(3) Pramod Kapoor
(4) Anundhati Roy

**49.** Which country became seventh member of South Asia Sub regional Economic Cooperation (SASEC) on 31 March 2017?
(1) Myanmar (2) Bhutan
(3) Nepal (4) Maldives

**50.** How many Indian states share their boundaries with Nepal?
(1) 3 (2) 4
(3) 8 (4) 5

## QUANTITATIVE APTITUDE

**51.** Which of the following can't be the unit's digit of a perfect square?
(1) 4 (2) 6
(3) 8 (4) 9

**52.** Amar can complete a work in 30 days and Raman can complete the same work in 15 days. If both of them work together, then in 4 days what per cent of the total work will be completed?
(1) 15 (2) 37
(3) 40 (4) 45

**53.** The lengths of two parallel sides of a trapezium are 21 cm and 9 cm. If its height is 10 cm, then what is the area (in cm.$^2$) of the trapezium?
(1) 35 (2) 75
(3) 150 (4) 225

**54.** What will be the net discount per cent of three successive discounts of 20%, 10% and 30%?
(1) 45.2 (2) 49.6
(3) 54.6 (4) 50.4

**55.** Three bottles of equal capacity have mixtures of milk and water in ratio 5 : 7, 7 : 9 and 2 : 1 respectively. These three bottles are emptied into a large bottle. What is the percentage of milk in the new mixture?
(1) 49.6 (2) 52.3
(3) 51.2 (4) 50.7

**56.** Seven friends spent Rs. 14 each on a project and the eighth friend spent Rs. 21 more than the average expenditure of all eight of them. What is the amount of total money (in Rs.) spent by them?
(1) 133 (2) 136
(3) 141 (4) 155

**57.** A person sold his pen for Rs. 24 and his profit per cent was numerically equal to the cost price. What was the cost price (in Rs.) of the pen?
(1) 12 (2) 14
(3) 16 (4) 20

**58.** A, B and C are three students. A got 36% less marks than B and 16% more marks than C. If B got 145 marks, then what are the marks got by C?
(1) 120 (2) 110
(3) 80 (4) 75

**59.** After repairing, a scooter runs at the speed of 54 km/h and before repairing runs at the speed of 48 km/h. It covers a certain distance in 6 hours after repairing. How much time will it take to cover the same distance before repairing?
(1) 6 hours 15 minutes
(2) 6 hours 45 minutes
(3) 7 hours
(4) 7 hours 30 minutes

**60.** If a certain sum of money becomes thrice of itself in 5 years 4 months at simple interest, then what will be the annual rate of interest (in %)?
(1) 18.75 (2) 27.5
(3) 37.5 (4) 42.25

**61.** If $a + b + c = 11$ and $ab + bc + ca = 17$, then what is the value of $a^3 + b^3 + c^3 - 3abc$?
(1) 121 (2) 168
(3) 300 (4) 770

**62.** If $x^4 + \frac{1}{x^4} = 62$, then what is the value of $\left(x^6 + \frac{1}{x^6}\right)$ ?
(1) 144 (2) 288
(3) 396 (4) 488

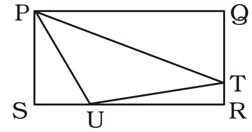
**63.** If $x + y = 4$, then what is the value of $\frac{2}{x-2} + \frac{2}{y-2}$ ?
(1) –1 (2) 0
(3) 4 (4) 16

**64.** If $\left(\frac{x}{5}\right) + \left(\frac{5}{x}\right) = -2$, then what is the value of $(x^3)$?
(1) –125 (2) 5
(3) $\frac{1}{125}$ (4) 625

**65.** In ΔPQR, ∠QPR = 45° and the bisectors of ∠PQR and ∠PRQ meet at O. What is the value (in degrees) of ∠QOR?
(1) 107.5 (2) 112.5
(3) 117.5 (4) 122.5

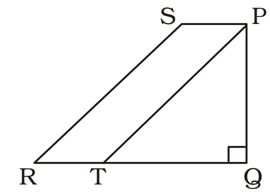
**66.** In triangle ABC, ∠ABC = 90°. BP is drawn perpendicular to AC. If ∠BAP = 30°, then what is the value (in degrees) of ∠PBC?
(1) 30 (2) 36
(3) 45 (4) 60

**67.** In the given figure, PQRS is a rectangle and PTU is a triangle. If PQ = 11 cm, UR = 8 cm, TR = 1 cm and QT = 3 cm, then what is the length (in cm.) of the line joining the mid–points of PT and TU?




(1) 2.5 (2) 3
(3) 4.5 (4) 5

**68.** In the given figure, area of isosceles triangle PQT is 72 cm². If QT = PQ, PQ = 2 PS and PT||SR, then what is the area (in cm.²) of the trapezium PQRS?



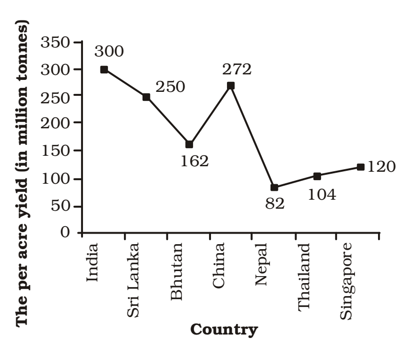

(1) 144 (2) 216
(3) 256 (4) 288

**69.** What is the simplified value of (cosecA + sinA) (cosecA – sinA)?
(1) $\cos^2A + \cot^2A$
(2) $2\cos^2A$
(3) $2\cot^2A$
(4) 2 cosA cotA

**70.** What is the simplified value of $\sqrt{\frac{\sec A}{\sec A - 1} + \frac{\sec A}{\sec A + 1}}$?
(1) cosec A (2) $\sqrt{2}$ cosec A
(3) $2\sec^2A$ (4) sec A

**71.** What is the simplified value of $\left[\frac{\cos A}{(1 - \tan A)} + \frac{\sin A}{(1 - \cot A)}\right]^2$?
(1) sin A + cos A
(2) 1 + sin 2A
(3) 1 + cos 2A
(4) tan A + cot A

**Directions (72–75) :** The line chart given below shows the per acre yield (in million tonnes) of tea of seven countries.




**72.** What is average per acre yield (in million tonnes) of these seven countries?
(1) 163.14 (2) 184.28
(3) 146.78 (4) 198.26

**73.** What is the respective ratio of average per acre yield of the three countries having the highest yield to average per acre yield of the three countries having the least yield?
(1) 148 : 65 (2) 201 : 149
(3) 89 : 69 (4) 137 : 51

**74.** Total per acre yield of India and China is what per cent of the total per acre yield of the remaining countries?
(1) 44.34 (2) 56.68
(3) 83.24 (4) 79.66

**75.** All the countries are arranged in ascending order of per acre yield. If bottom two countries increase their per acre yield by 20% and all other countries increase their per acre yield by 10%, then what is the new average per acre yield (in million tonnes)?
(1) 205.37 (2) 210.82
(3) 201.19 (4) 199.26

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The reason Priya was late (1)/ to the meeting is because her (2)/ flight was delayed. (3)/ No Error (4)

**77.** Not only did they offer him (1)/ good salary but provided (2)/ him with a beautiful bungalow. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** His father _____ him up in a construction business.
(1) built (2) hold
(3) keep (4) set

**79.** I have _____ respect for his achievement.
(1) abundant (2) profound
(3) strong (4) unique

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Boast**
(1) Avoid (2) Change
(3) Rely (4) Pride

**81. Haste**
(1) Burden (2) Expect
(3) Hurry (4) Sight

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Refulgent**
(1) Dark (2) Loud
(3) Rough (4) Sweet

**83. Skeptic**
(1) Believer (2) Erroneous
(3) Nervous (4) Nihilist

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Herculean task**
(1) Important task
(2) Motivating
(3) Optional to do
(4) Very difficult task

**85. On tenterhooks**
(1) Flattery
(2) In a disorganized manner
(3) In anxious suspense
(4) Speak quickly

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** Neha **(would be looked)** beautiful in Indian attire.
(1) had looking
(2) was looked
(3) would look
(4) No Improvement

**87. (People have been long known)** how important the trees are to them.
(1) People have to know long
(2) People had long known
(3) People have long known
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. An associate in crime**
(1) Accomplice
(2) Callous
(3) Itinerant
(4) Philistine

**89. Man behaving more like a woman than as a man**
(1) Biped
(2) Effeminate
(3) Gregarious
(4) Inalienable

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Ecstasy (2) Profecient
(3) Sacrifice (4) Temporary

**91.** (1) Familiar (2) Grammer
(3) Narrator (4) Operator

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. On the earth, liquid forms and solid forms (ice/snow) predominate.
Q. The water cycle has two distinct branches the atmospheric branch and the terrestrial branch.
R. Water plays a versatile role in the functioning of the biosphere.
S. In the atmosphere, water exists mainly in gaseous form.
(1) RSPQ (2) RQSP
(3) RPSQ (4) RQPS

**93.** P. For however elusively, it still knew of harbours and anchors, of homes to which to return, and are barns in which to store the harvest.
Q. The works of the early Renaissance and the poetry of Shakespeare vibrate with the compassion for live experience in danger of dying from exposure and neglect.
R. Yes, it was a genius of courage, not of desperate audacity.
S. In this compassion was the creative genius of the age.

(1) SQRP (2) PRSQ
(3) QSRP (4) RSPQ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**Sunita has written a story which fascinates everyone.**

(1) A story has been written by Sunita which fascinates every one.
(2) Everyone is fascinated by the story which has been written by Sunita.
(3) Every one fascinates the story which is written by Sunita.
(4) Story written by Sunita fascinates everyone.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**Rajesh ordered his driver to do as he was told.**

(1) Rajesh ordered his driver "Do as you are told".
(2) Rajesh said to his driver "Do as I told you".
(3) Rajesh said to his driver "Do as you are told ".
(4) Rajesh said to his driver "Do as you were told ".

**Directions (96–100) :** In the following questions, the sentences given with blank (numbered) are to be filled in with an appropriate words. Select the correct alternative out of the four.

Management is a set of **(96)** that can keep a complicated system of people and technology running **(97)**. The most **(98)** aspects of management include planning, budgeting, organizing, staffing, controlling and problem solving. Leadership is a set of process that creates organization in the first place or adapts, them to **(99)** changing circumstances. Leadership defines what the future should look like, aligns people with that **(100)** and inspires them to make it happen despite the obstacles.

**96.** (1) instructions
(2) resources
(3) processes
(4) proposals

**97.** (1) fastly
(2) reliably
(3) smoothly
(4) sharply

**98.** (1) dangerous
(2) difficult
(3) important
(4) terrible

**99.** (1) normally
(2) run
(3) show
(4) significantly

**100.** (1) look (2) role
(3) source (4) vision

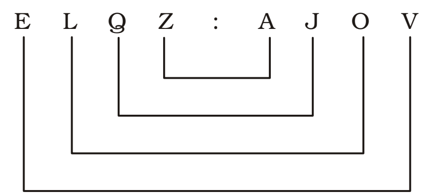
## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (2) | **3.** (1) | **4.** (1) |
| **5.** (4) | **6.** (2) | **7.** (1) | **8.** (2) |
| **9.** (4) | **10.** (4) | **11.** (3) | **12.** (4) |
| **13.** (4) | **14.** (3) | **15.** (3) | **16.** (2) |
| **17.** (2) | **18.** (4) | **19.** (4) | **20.** (2) |
| **21.** (1) | **22.** (2) | **23.** (3) | **24.** (1) |
| **25.** (1) | **26.** (4) | **27.** (2) | **28.** (3) |
| **29.** (3) | **30.** (2) | **31.** (1) | **32.** (2) |
| **33.** (3) | **34.** (3) | **35.** (3) | **36.** (3) |
| **37.** (1) | **38.** (1) | **39.** (2) | **40.** (1) |
| **41.** (3) | **42.** (4) | **43.** (3) | **44.** (2) |
| **45.** (1) | **46.** (3) | **47.** (4) | **48.** (4) |
| **49.** (1) | **50.** (4) | **51.** (3) | **52.** (3) |
| **53.** (3) | **54.** (2) | **55.** (4) | **56.** (2) |
| **57.** (4) | **58.** (3) | **59.** (2) | **60.** (3) |
| **61.** (4) | **62.** (4) | **63.** (2) | **64.** (1) |
| **65.** (2) | **66.** (1) | **67.** (1) | **68.** (1) |
| **69.** (1) | **70.** (2) | **71.** (2) | **72.** (2) |
| **73.** (4) | **74.** (4) | **75.** (1) | **76.** (2) |
| **77.** (2) | **78.** (4) | **79.** (2) | **80.** (4) |
| **81.** (3) | **82.** (1) | **83.** (1) | **84.** (4) |
| **85.** (3) | **86.** (3) | **87.** (3) | **88.** (1) |
| **89.** (2) | **90.** (2) | **91.** (2) | **92.** (2) |
| **93.** (3) | **94.** (1) | **95.** (3) | **96.** (3) |
| **97.** (3) | **98.** (3) | **99.** (4) | **100.** (4) |

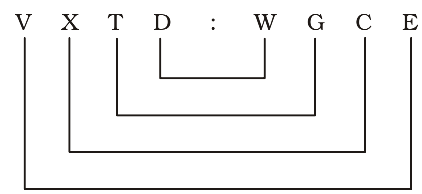
## EXPLANATIONS

**1.** (4) Here 'Sound–Animal' relationship has been shown. The sound made by dog is called Barking. Similarly, the sound made by Sparrow is called Chirping.

**2.** (2)




Pairs of opposite letters.
Similarly,




**3.** (1) 40; $40 \times \frac{5}{2} = 100$

Similarly,

56; $56 \times \frac{5}{2} = 140$

**4.** (1) Except Book, all others are writing materials.

**5.** (4) $A \longleftrightarrow Z$
Pair of opposite letters.

$A \xrightarrow{+5} F$

$L \longleftrightarrow O$ ; $L \xrightarrow{+5} Q$

$E \longleftrightarrow V$ ; $E \xrightarrow{+5} J$

But,

$Z \longleftrightarrow A$ ; $Z \xrightarrow{+3} C$

**6.** (2) Except the number–pair '63–93', in all other number–pairs the product of two digits on both sides is equal.

41 – 22
$\Rightarrow 4 \times 1 = 2 \times 2$
82 – 44
$\Rightarrow 8 \times 2 = 4 \times 4$
83 – 64
$\Rightarrow 8 \times 3 = 6 \times 4$

But,
63 – 93
$\Rightarrow$ 6 × 3 – 9 × 3
$\Rightarrow$ 18 ≠ 27

**7.** (1) Arrangement of words as per dictionary :
(1) Cadartrally
↓
(2) Caddisflies
↓
(4) Caddisworms
↓
(5) Cadetships
↓
(3) Caducities

**8.** (2)

A —+5→ F —+5→ K —+5→ P
C —+5→ H —+5→ M —+5→ R
E —+5→ J —+5→ O —+5→ T

**9.** (4)

9 —×2→ 18 —×4→ 72 —×8→ 576 —×16→ 9216

**10.** (4) Sneha is the daughter of only sister of Akshay. Therefore, Akshay is uncle of Sneha.

**11.** (3) Number of boys in the row
= 18 + 18 – 1 = 35

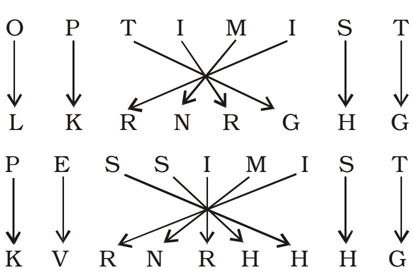
**12.** (4) There is no 'V' letter in the given word. Therefore, the word SOLVE cannot be formed.

[A B S] O L U T [E] $\Rightarrow$ BASE

A [B S O] L U T [E] $\Rightarrow$ BOSE

A B [S O L] U T [E] $\Rightarrow$ LOSE

**13.** (4)




**14.** (3) [+ ⇒ – | – ⇒ +]

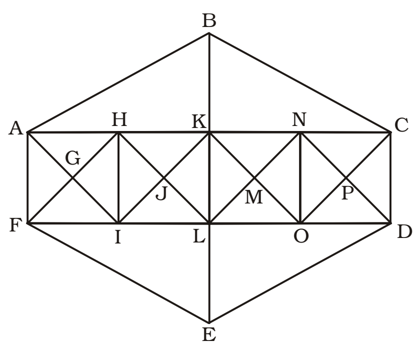
4 – 10 × 5 + 9 ÷ 3 = 51
$\Rightarrow$ 4 + 10 × 5 – 9 ÷ 3 = 51
$\Rightarrow$ 4 + 50 – 3 = 51
$\Rightarrow$ 54 – 3 = 51
$\Rightarrow$ 51 = 51

**15.** (3) 12 (20) 16
= 4 × 3 (4 × 5) 4 × 4
21 (35) 28
= 7 × 3 (7 × 5) 7 × 4
Therefore,
48 (80) A
= 16 × 3 (16 × 5) 16 × 4
$\therefore$ A = 16 × 4 = 64

**16.** (2) First Figure
8 × 6 × 2 = 96
Second Figure
15 × 2 × 2 = 60
Third Figure
? × 5 × 6 = 120

$\Rightarrow ? = \frac{120}{30} = 4$

**17.** (2)




The triangles are :
ΔGAH; ΔGAF; ΔGFI; ΔGIH; ΔAFH; ΔAFI; ΔIHF; ΔIHA; ΔJHK; ΔJHI; ΔJIL; ΔJLK; ΔHIK; ΔHIL; ΔLKH; ΔLKI; ΔMKN; ΔMKL; ΔMLO; ΔMON; ΔKLM; ΔKLO; ΔONK; ΔONL; ΔPNC; ΔPNO; ΔPOD; ΔPDC; ΔNOC; ΔNOD: ΔDCN; ΔDCO; ΔHFL; ΔIAK; ΔKIO; ΔLNH; ΔNLD; ΔOCK; ΔBKA; ΔBKC; ΔBAC; ΔELF; ΔELD; ΔEDF
Thus, there are 44 triangles in the given figure.

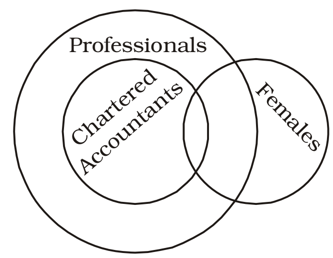
**18.** (4) First Premise is Universal Affirmative (A–type).
Second Premise is Particular Affirmative (I–type).

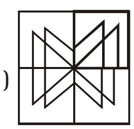
All dens are spirals.
↙↗
Some spirals are cards.

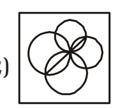
A + I $\Rightarrow$ No Conclusion

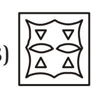
**19.** (4) C, D, E and F are on the faces adjacent to B. Therefore, G lies opposite B.

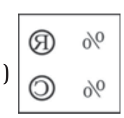
**20.** (2) All chartered accountants are professionals.
Some professionals may be females and vice–versa.
Some chartered accountants may be females and vice–versa.




**21.** (1) 

**22.** (2) 

**23.** (3) 

**24.** (1) 

**25.** (1) T = 00, 13, 21, 34, 42
R = 04, 12, 23, 31, 40
A = 55, 68, 76, 89, 97
Y = 02, 10, 24, 33, 41

| Option | T | R | A | Y |
|---|---|---|---|---|
| (1) | 00 | 04 | 68 | 02 |
| (2) | 21 | 41 | 97 | 41 |
| (3) | 34 | 12 | 55 | 11 |
| (4) | 42 | 23 | 89 | 23 |

**26.** (4) Credit rationing is an action taken by lending institutions to limit or deny credit based on borrowers' creditworthiness and an overload of loan demands. Banks use credit rationing to control lending beyond the monetary base of the bank. Controlling the prices and demand and supply leads to availability of goods and services for every section of the society.

**27.** (2) National income is the (money) value of all the final goods and services produced by a country in a year. It measures the output generated by a country's organizations located domestically or abroad. Gross National Product is the total market value of all final goods and services produced annually in a country plus net factor income from abroad. Net National Product is the market value of all final goods and services after allowing for depreciation. It is also called National Income at market price. Thus, NNP=GNP-Depreciation

**28.** (3) Articles 148 to 151 in Part V makes provisions for a Comptroller and Auditor General of India. He can resign any time from his office by addressing the resignation letter to the president. He can also be removed by the president on same grounds and in the same manner as a judge of the Supreme Court. The CAG holds office for a term of six years from the date he assumes office or until he attains the age of 65 years, whichever is earlier.

**29.** (3) Contingency Fund is created as an imprest account to meet some urgent or unforeseen expenditure of the government. This fund was constituted by the government under Article 267 of the Constitution of India. This fund is at the disposal of the President. Any expenditure incurred from this fund requires a subsequent approval from the Parliament and the amount withdrawn is returned to the fund from the Consolidated Fund.

**30.** (2) Raziya Sultana was the Sultan of Delhi from 10 November, 1236 to 14 October, 1240. A member of the Mamluk dynasty, she is known for being the only female ever to rule the Delhi Sultanate. She was Shams-ud-din Iltutmish's only daughter and had three brothers.

**31.** (1) Lord William Bentinck served as Governor General of India between 1828 to 1835. His tenure is known for the social reforms such as Abolition of Sati in 1829, Suppression of Thugi, and Suppression of Infanticide etc. English was introduced as a medium of higher education on the advice of his council member, Thomas Babington Macaulay.

**32.** (2) Venus is sometimes regarded as Earth's sister planet as :

- Venus is only slightly smaller than Earth (95% of Earth's diameter, 80% of Earth's mass).
- Both have few craters indicating relatively young surfaces.
- Their densities and chemical compositions are similar.

**33.** (3) Isolines, also referred to as contour lines, can be used to represent elevation on a map by connecting points of equal elevation. An isohyet or isohyetal line is a line joining points of equal rainfall on a map in a given period.

**34.** (3) The study of fungi is known as 'Mycology'. It is a group of heterotrophic plants of four divisions. The divisions of fungi are Phycomycetes, Ascomycetes, Basidiomycetes and Fungi Imperfecti or Deuteromycetes.

**35.** (3) Lactobacillus is any of a group of rod-shaped, gram-positive, non-spore-forming bacteria of the family Lactobacillaceae characterized by their ability to produce lactic acid as a by-product of glucose metabolism. They are used commercially during the production of sour milks, cheeses, and yogurt.

**36.** (3) The ribcage encloses the thoracic cavity and helps protect the heart and lungs from damage. There are 24 ribs in the human body, divided into two sets of 12 curved, flat-bones. Each one is attached by cartilage at the back to the thoracic vertebrae.

**37.** (1) In terms of energy at the beginning the ball has high kinetic energy and no potential energy. As it moves up its kinetic energy gets converted to potential energy. At the peak its kinetic energy is nil and it has the highest potential energy. From now onwards its potential energy begins to be converted to kinetic energy as it falls to the ground. In other words the sum of kinetic energy and the potential energy remain same.

**38.** (1) The SI unit of heat energy is measured in joules (J). 1 joule is equal to 0.238902957619 calories. Calorie being the energy needed to raise the temperature of 1 gram of water through 1°C (now usually defined as 4.1868 joules).

**39.** (2) The binary numbers are commonly used in digitaland computer circuits and are represented by either a logic "0" or a logic "1". Binary numbering systemsare best suited to the digital signal coding of binary, as it uses only two digits, one and zero, to form different figures.

**40.** (1) Sodium bicarbonate commonly known as baking soda is a chemical compound with the formula $NaHCO_3$. It is a salt composed of sodium ions and bicarbonate ions. It is commonly used as a pH buffering agent, an electrolyte re-

plenisher, systemic alkalizer and in topical cleansing solutions.

**41.** (3) Iron ores are rocks and minerals from which metallic iron can be economically extracted. The ores are usually rich in iron oxides and vary in colour from dark grey, bright yellow, or deep purple to rusty red. The iron itself is usually found in the form of magnetite, hematite, goethite, limonite or siderite.

**42.** (4) Diversity is higher in the tropics primarily because there are fewer ecological obstacles to higher biodiversity. In the tropics, plants and animals have the greatest access to consistent energy, water, and carbon, etc. Tropical areas have a more stable climate compared to that of the temperate areas. As a result, the tropics succeed in supporting a higher number of species as the species do not have to keep adapting to a changing season.

**43.** (3) Varishtha Pension Bima Yojana 2017 will be implemented through Life Insurance Corporation of India (LIC) during the current financial year to provide social security during old age and protect elderly persons aged 60 years and above against a future fall in their interest income due to uncertain market conditions. The scheme will provide an assured pension based on a guaranteed rate of return of 8% per annum for ten years, with an option to opt for pension on a monthly / quarterly / half yearly and annual basis.

**44.** (2) Albert Sabin developed the widely-used, oral, attenuated poliovirus vaccine (OPV). A form of the oral attenuated vaccine is used today in the worldwide effort to eradicate acute poliomyelitis.

**45.** (1) Term-Associated Sport
- No ball-Cricket
- Goal-Hockey
- Knockout-Boxing

**46.** (3) Sonal Mansingh is a prominent Indian classical dancer who specializes in Bharatanatyam and Odissi. She was the youngest recipient of Padma Bhushan in 1992. In 2003, Sonal became the first Indian woman dancer to be awarded with Padma Vibhushan.

**47.** (4) 2016 Arjuna Award in the field of wrestling were given to Vinesh (wrestling), Amit Kumar (wrestling) and Virender Singh (wrestling, deaf). Rajat Chauhan was given awrd for archery.

**48.** (4) The Ministry of Utmost Happiness is the second novel by Indian writer Arundhati Roy. The novel deals with some of the darkest and most violent episodes of modern Indian history, from land reform that disowned poor farmers to the 2002 Godhra train burning and Kashmir insurgency.

**49.** (1) South Asia Subregional Economic Cooperation (SASEC) program of Asian Development Bank (ADB) is expanding towards the East with Myanmar formally becoming the 7th member of SASEC in 2017. The SASEC program was formed in 2001 in response to the request of the four countries of South Asia – Bangladesh, Bhutan, India and Nepal – from ADB to assist in facilitating economic cooperation among them. These four countries comprise the South Asia Growth Quadrangle (SAGQ), formed in 1996, as a vehicle for accelerating sustainable economic development through regional cooperation.

**50.** (4) Bihar, Uttarakhand, Uttar Pradesh, Sikkim and West Bengal borders Nepal.

**51.** (3) 8 can't be the units digit of a perfect square.

**52.** (3) Four days' work of Amar and Raman

$= 4\left(\frac{1}{30}+\frac{1}{15}\right)$

$= 4\left(\frac{1+2}{30}\right) = \frac{4}{10}$ parts

$\therefore$ Required per cent

$= \frac{4}{10} \times 100 = 40\%$

**53.** (3) Area of Trapezium $= \frac{1}{2} \times$ height × (sum of parallel sides)

$= \frac{1}{2} \times 10 \times (21 + 9)$

$= \frac{1}{2} \times 10 \times 30 = 150$ cm.$^2$

**54.** (2) Let the marked price be Rs. 100.

Due amount

$= 100 \times \frac{80}{100} \times \frac{90}{100} \times \frac{70}{100}$

= Rs. 50.4

Net discount = Rs. (100 – 50.4)

= Rs. 49.6 i.e., 49.6%

**55.** (4) Ratio of milk and water in the new mixture

$= \left(\frac{5}{12}+\frac{7}{16}+\frac{2}{3}\right) : \left(\frac{7}{12}+\frac{9}{16}+\frac{1}{3}\right)$

$= \left(\frac{20+21+32}{48}\right) : \left(\frac{28+27+16}{48}\right)$

$= \frac{73}{48} : \frac{71}{48}$

Sum of the terms of ratio

$= \frac{73}{48} + \frac{71}{48} = \frac{144}{48}$

Per cent of milk $= \dfrac{\frac{73}{48}}{\frac{144}{48}} \times 100$

$= \frac{7300}{144} = 50.69\%$

**56.** (2) Let expense of eighth friend be Rs. $x$.

According to the question,

$\frac{14 \times 7 + x}{8} + 21 = x$

$\Rightarrow \frac{98 + x}{8} + 21 = x$

$\Rightarrow 98 + x + 168 = 8x$

$\Rightarrow 7x = 266$

$\Rightarrow x = \frac{266}{7} = 38$

Total expense

= Rs. (14 × 7 + 38)

= Rs. (98 + 38) = Rs. 136

**57.** (4) Let the cost price of pen be Rs. $x$.

$\therefore$ Profit = $x$%

$\therefore$ $x$% of $x + x = 24$

$\Rightarrow x + \frac{x^2}{100} = 24$

$\Rightarrow 100x + x^2 = 2400$

$\Rightarrow x^2 + 100x - 2400 = 0$

$\Rightarrow x^2 + 120x - 20x - 2400 = 0$

$\Rightarrow x(x + 120) - 20(x + 120) = 0$

$\Rightarrow (x + 120)(x - 20) = 0$

$\Rightarrow x$ = Rs. 20

OR

$x^2 + 100x = 2400$

$\Rightarrow x(x + 100) = 20 \times 120$

$\Rightarrow x(x + 100) = 20(20 + 100)$

$\Rightarrow x$ = Rs. 20

**58.** (3) Marks obtained by B = 145

$\therefore$ Marks obtained by A

$= \frac{145 \times 64}{100} = 92.8$

Let marks obtained by C be $x$.

$\therefore x \times \frac{116}{100} = 92.8$

$\Rightarrow x = \frac{9280}{116} = 80$

**59.** (2) Distance covered at 54 kmph in 6 hours

= (54 × 6) km.

$\therefore$ Required time

$= \left(\frac{54 \times 6}{48}\right)$ hours

$= \left(\frac{27}{4}\right)$ hours $= 6\frac{3}{4}$ hours

= 6 hours 45 minutes

**60.** (3) Time $= 5\frac{4}{12}$ years

$= 5\frac{1}{3}$ years $= \frac{16}{3}$ years

Rate $= \frac{2P \times 100}{\frac{16}{3} \times P} = \frac{200 \times 3}{16}$

= 37.5% per annum

**61.** (4) $a + b + c = 11$ and $ab + bc + ca = 17$

$\therefore a^2 + b^2 + c^2 = (a + b + c)^2 - 2(ab + bc + ca) = (11)^2 - 2 \times 17$

$= 121 - 34 = 87$

$\therefore a^3 + b^3 + c^3 - 3abc = (a + b + c)[a^2 + b^2 + c^2 - (ab + bc + ca)]$

$= (11)[87 - (17)]$

$= 11 \times 70 = 770$

**62.** (4) $x^4 + \frac{1}{x^4} = 62$

$\therefore \left(x^2 + \frac{1}{x^2}\right)^2 = x^4 + \frac{1}{x^4} + 2$

$= 62 + 2 = 64$

$\Rightarrow x^2 + \frac{1}{x^2} = \sqrt{64} = 8$

$\therefore \left(x^2 + \frac{1}{x^2}\right)^3$

$= x^6 + \frac{1}{x^6} + 3 \times x^2 \times \frac{1}{x^2}\left(x^2 + \frac{1}{x^2}\right)$

$\Rightarrow (8)^3 = x^6 + \frac{1}{x^6} + 3 \times 8$

$\Rightarrow x^6 + \frac{1}{x^6} = 512 - 24 = 488$

**63.** (2) Expression

$= \frac{2}{x - 2} + \frac{2}{y - 2}$

$= 2\left[\frac{1}{x - 2} + \frac{1}{y - 2}\right]$

$= 2\left[\frac{y - 2 + x - 2}{(x - 2)(y - 2)}\right]$

$= 2\left[\frac{x + y - 4}{(x - 2)(y - 2)}\right]$

$= 2\left[\frac{4 - 4}{(x - 2)(y - 2)}\right] = 0$

**64.** (1) $\frac{x}{5} + \frac{5}{x} = -2$

$\Rightarrow \frac{x^2 + 25}{5x} = -2$

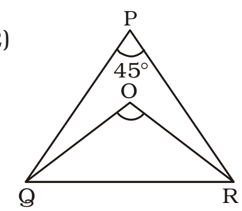
$\Rightarrow x^2 + 10x + 25 = 0$

$\Rightarrow (x + 5)^2 = 0$

$\Rightarrow x + 5 = 0 \Rightarrow x = -5$

$\therefore x^3 = (-5)^3 = -125$

**65.** (2)

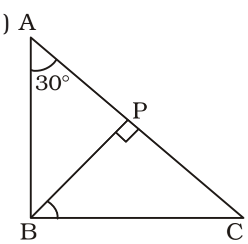



$\angle QOR = 90° + \frac{\angle QPR}{2}$

$= 90° + \frac{45°}{2}$

$= 90° + 22.5° = 112.5°$

**66.** (1)




In ΔABP,

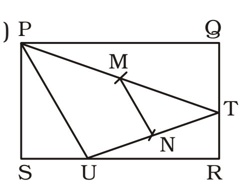
∠ABP = 180° – (90° + 30°)

= 180° – 120° = 60°

∠ABC = 90°

∠PBC = 90° – 60° = 30°

**67.** (1)




M and N are respective mid–points of PT and TU.

PQ = 11 cm.

SU = 11 – 8 = 3 cm.

PS = 3 + 1 = 4 cm.

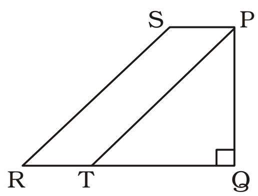
PU = $\sqrt{3^2+4^2} = \sqrt{9+16}$

$= \sqrt{25} = 5$ cm.

$\therefore$ MN = $\frac{PU}{2} = \frac{5}{2}$

= 2.5 cm. (By mid–point theorem)

**68.** (1)




Area of ΔPQT = 72 sq. cm.

$\Rightarrow \frac{1}{2} \times PQ \times QT = 72$

$\Rightarrow \frac{1}{2} \times PQ \times PQ = 72$

$\Rightarrow PQ^2 = 144$

$\Rightarrow PQ = \sqrt{144} = 12$ cm.

$\therefore PS = \frac{PQ}{2} = \frac{12}{2} = 6$ cm.

PT | | SR

RT = 6 cm.

Area of trapezium PQRS = $\frac{1}{2}$ × height × (Sum of parallel sides)

$= \frac{1}{2} \times 12 \times (6 + 18)$

= 6 × 24 = 144 cm.$^2$

**69.** (1) (cosecA + sinA) (cosecA – sinA)

$= \text{cosec}^2A - \sin^2A$

$= 1 + \cot^2A - \sin^2A$

$= 1 - \sin^2A + \cot^2A$

$= \cos^2A + \cot^2A$

**70.** (2) $\sqrt{\frac{\sec A}{\sec A-1}+\frac{\sec A}{\sec A+1}}$

$= \sqrt{\frac{\sec A(\sec A+1)+\sec A(\sec A-1)}{(\sec A-1)(\sec A+1)}}$

$= \sqrt{\frac{\sec^2A+\sec A+\sec^2A-\sec A}{\sec^2A-1}}$

$= \sqrt{\frac{2\sec^2A}{\tan^2A}} = \sqrt{\frac{2}{\cos^2A}\times\frac{\cos^2A}{\sin^2A}}$

$= \sqrt{\frac{2}{\sin^2A}} = \frac{\sqrt{2}}{\sin A}$

$= \sqrt{2}$ cosecA

**71.** (2) $\left[\frac{\cos A}{1-\tan A}+\frac{\sin A}{1-\cot A}\right]^2$

$\left[\frac{\cos A}{1-\frac{\sin A}{\cos A}}+\frac{\sin A}{1-\frac{\cos A}{\sin A}}\right]^2$

$= \left[\frac{\cos^2A}{\cos A-\sin A}+\frac{\sin^2A}{\sin A-\cos A}\right]^2$

$= \left[\frac{\cos^2A}{\cos A-\sin A}-\frac{\sin^2A}{\cos A-\sin A}\right]^2$

$= \left[\frac{\cos^2A-\sin^2A}{\cos A-\sin A}\right]^2$

$= \left[\frac{(\cos A+\sin A)(\cos A-\sin A)}{\cos A-\sin A}\right]^2$

$= (\cos A + \sin A)^2$

$= \cos^2A + \sin^2A + 2\cos A\sin A$

$= 1 + \sin 2A$

**72.** (2) Average per acre yield of these seven countries = $\frac{1290}{7}$

= 184.28 million tonnes

**73.** (4)

$= \frac{\text{Average per acre yield of 3 countries having the highest yield}}{\text{Average per acre yield of 3 countries having the least yield}}$

$= \frac{\frac{300+272+250}{3}}{\frac{82+104+120}{3}} = \frac{\frac{822}{3}}{\frac{306}{3}}$

$= \frac{822}{306} = \frac{137}{51} = 137 : 51$

**74.** (4) Total per acre yield of India and China

= 300 + 272

= 572 million tonnes

Total per acre yield of other countries = (1290 – 572)

= 718 million tonnes

$\therefore$ 572 = $x$% of 718

$\Rightarrow 572 = \frac{718 \times x}{100}$

$\Rightarrow x = \frac{57200}{718} = 79.66\%$

**75.** (1) Ascending order $\Rightarrow$ 82 < 104 < 120 < 162 < 250 < 272 < 300

Required average

$= \frac{\frac{186\times120}{100}+\left(\frac{1290-186}{100}\right)\times110}{7}$

$= \frac{223.2+1214.4}{7} = \frac{1437.6}{7}$

= 205.37 million tonnes

**76.** (2) **Because (Conjunction)** = for the reason that.

**Look at the sentence :**

We did it because we felt it our duty.

The reason will be followed by that i.e., to the meeting is that..... should be used.

**77.** (2) 'Not only.....but also' is a correlative conjunction.

**Look at the sentences :**

He speaks not only French but also English.

Not only he but also his friends are cooperative.

So, correct usage – but also provided.....

**78.** (4) **Set someone up (phrasal verb)** = establish someone in a particular role.

**Look at the sentence :**

My mother set me up in mobile business.

**79.** (2) **Profound (Adjective)** = heartfelt; great.

**Abundant (Adjective)** = plentiful; ample.

**Strong (Adjective)** = solid; sturdy.

**Unique (Adjective)** = special; typical.

**80.** (4) **Boast/pride (Verb)** = give oneself airs; gloat; possess a feature that is source of pride.

**Look at the sentence :**

The hotel boasts high standards of comfort.

**Avoid (Verb)** = keep away from; stay away from.

**Change (Verb)** = make or become different.

**Rely (Verb)** = depend; bank upon.

**81.** (3) **Haste/hurry (Noun)** = speed; swiftness.

**Look at the sentence :**

Haste makes waste.

**Burden (Noun)** = load; weight.

**Sight (Noun)** = the power of seeing.

**Expect (Verb)** = anticipate; look for.

**82.** (1) **Refulgent (Adjective)** = bright; shining.

**Look at the sentence :**

Refulgent rays of the sun.

**Dark (Adjective)** = not reflecting much light.

**Look at the sentence :**

Dark green furniture.

**Loud (Adjective)** = noisy; blaring; deafening.

**Rough (Adjective)** = uneven; irregular.

**Sweet (Adjective)** = sugary; sweetened.

**83.** (1) **Sceptic or skeptic (Noun)** = doubter.

**Look at the sentence :**

He is a sceptic.

**Believer (Noun)** = a person who believes others.

**Look at the sentence :**

My father is a simple believer.

**Erroneous (Adjective)** = wrong; incorrect.

**Nervous (Adjective)** = easily agitated; anxious.

**Nihilist (Noun)** = a person who believes that life is meaningless.

**84.** (4) **very difficult task**

**Look at the sentence :**

Going up a mountain is a Herculean task.

**Herculean (Adjective)** = relating to Hercules who performed the twelve labours as per Greek mythrology.

**85.** (3) **in anxious suspense; anxious and worried.**

**Look at the sentence :**

The movie keeps one on tenterhooks until the last moment.

**Tenterhook (Noun)** = use of the hooks or bent nails that hold cloth stretched on a tenter (a framework on which fabric can be held tant).

**86.** (3) **would look**

'would' is a modal verb and is used for talking about the result of an event that you imagine.

**Look at the structure :**

Subject + would + $V_1$.

**Look at the sentence :**

I would look mad in these clothes.

**87.** (3) **People have long known**

Present Perfect tense – It is used for indicating a link between the present and the past. The time of action is before now but not specified.

So, use of present perfect tense is apt and appropriate.

**88.** (1) **Callous (Adjective)** = heartless; cold; cold–hearted.

**Itinerant (Adjective)** = wandering; roving.

**Philistine (Noun)** = a person who is hostile or indifferent to culture.

**89.** (2) **Biped (Adjective)** = using two legs to walk.

**Gregarious (Adjective)** = sociable; social.

**Inalienable (Adjective)** = untransferable; non–negotiable.

**90.** (2) Correct spelling ⇒ proficient

**91.** (2) Correct spelling ⇒ grammar

**94.** (1) A story has been written by Sunita which fascinates everyone.

It is active voice of present perfect tense. Its passive voice is made as follows :

Subject + has been/have been + $V_3$ + by + object.

**95.** (3) Rajesh said to his driver, "Do as you are told."

It is indirect speech of an imperative sentence.

Its direct speech is made as follows :

⇒ 'ordered' changes to said to

⇒ inverted commas " " are placed at their proper places.

⇒ Pronouns change as per the context of the sentence.

⇒ Tense changes (here, past passive changes to present passive).

⇒ Reported speech (reported words) starts with $V_1$, *i.e.* Do (in this case).

**96.** (3) **Process (Noun)** = a series of actions/steps taken in order to achieve a particular end.

**97.** (3) **Smoothly (Adverb)** = without any difficulty; evenly; quietly; steadily.

**98.** (3) **Important (Adjective)** = crucial; key significant.

**99.** (4) **Significantly (Adverb)** = notably; remarkably; outstandingly.

**100.** (4) **Vision (Noun)** = the ability to think about or plan the future with imagination/wisdom; creativity.

**Look at the sentence :**

This organisation has lost its vision and direction.

❐❐❐

# SET 19

## SOLVED PAPER
# SSC CGL TIER-I (CBE) EXAM

**Held on : 12.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Book : Pages :: Continent : ?
(1) Water (2) Forest
(3) Countries (4) Land

**2.** In the following question, select the related letters from the given alternatives :
JKLM : IIII :: PQRS : ?
(1) PPPP (2) OOOO
(3) TTTT (4) OOPP

**3.** In the following question, select the related number from the given alternatives :
4 : 17 :: 7 : ?
(1) 49 (2) 50
(3) 51 (4) 52

**4.** In the following question, select the odd word pair from the given alternatives :
(1) Sad : Hopeful
(2) Happy : Ecstatic
(3) High : Giant
(4) Trail : Pathway

**5.** In the following question, select the odd letters from the given alternatives :
(1) FHJ (2) LNQ
(3) JLN (4) NPR

**6.** In the following question, select the odd number pair from the given alternatives:
(1) 11 – 121 (2) 13 – 169
(3) 19 – 391 (4) 21 – 441

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Feeble 2. From
3. Floor 4. Foam
5. Fluorescent
(1) 13542 (2) 15342
(3) 13524 (4) 15324

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series :
A, E, I, M, ?
(1) P (2) Q
(3) R (4) O

**9.** In the following question, select the missing number from the given series :
1, 3, 6, 11, 18, ?
(1) 27 (2) 28
(3) 29 (4) 31

**10.** Pointing towards a man, Ritika said "He is the son of my grandfather's only son". How is Ritika related to that man?
(1) Aunty (2) Sister
(3) Mother (4) Wife

**11.** Among four books, Book 1 is twice as heavy as Book 2. Book 3's weight is half of Book 2's weight. Book 4 is 60 grams more as compared to Book 2 but 60 grams less as compared to Book 1. Which book is the heaviest?
(1) Book 1 (2) Book 2
(3) Book 3 (4) Book 4

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**IMPROVEMENT**
(1) ROPE
(2) TRIM
(3) IMPORTANT
(4) PROVE

**13.** In a certain code language, "MASTER" is written as "682145" and "STAMP" is written as "21869". How is "PASTE" written in that code language?
(1) 82145 (2) 98214
(3) 69218 (4) 95184

**14.** If "K" denotes "multiplied by", "M" denotes "subtracted from", "J" denotes "added to" and "L" denotes "divided by", then
44 M 24 K 56 L 14 J 60 = ?
(1) 16 (2) 72
(3) 8 (4) 140

**15.** If 27 (15) 33 and 41 (13) 53, then what is the value of 'A' in 26 (A) 35 ?
(1) 16 (2) 13
(3) 14 (4) 11

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

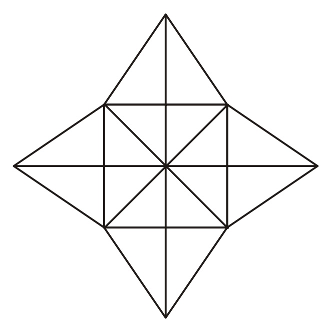
| | |
|---|---|
| 3 | 2 |
| 5 | 4 |
| 1 | 7 |

| | |
|---|---|
| 1 | 2 |
| 7 | 6 |
| 4 | 2 |

| | |
|---|---|
| 2 | 1 |
| 3 | 11 |
| 1 | ? |

(1) 2 (2) 4
(3) 6 (4) 8

**17.** How many triangles are there in the given figure?

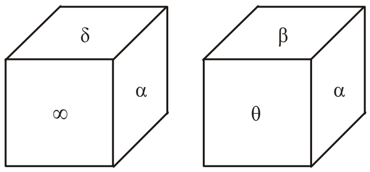


(1) 28 (2) 36
(3) 40 (4) 48

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows from the given statements.
**Statements :**
I. Some pens are pencils.
II. Some pens are erasers .
**Conclusions :**
I. Some pencils are erasers.
II. All erasers are pens.

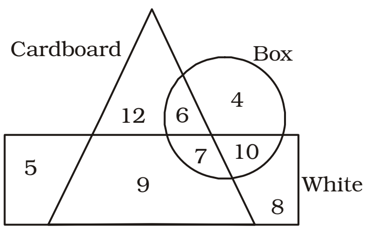
(1) Only Conclusion I follows.
(2) Only Conclusion II follows.
(3) Both Conclusions follow.
(4) Neither Conclusion I nor Conclusion II follows.

**19.** Two positions of a cube are shown below. What will come opposite to face containing 'δ'?




(1) δ (2) θ
(3) β or θ (4) β

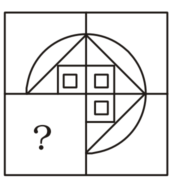
**20.** In the given figure, how many cardboard boxes are not white?



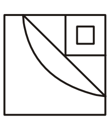
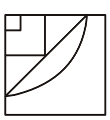

(1) 6 (2) 13
(3) 7 (4) 9

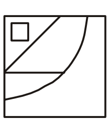
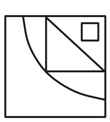
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



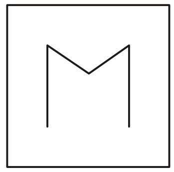

**Answer Figures :**

(1)  (2) 

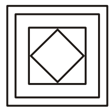
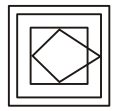
(3)  (4) 

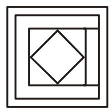
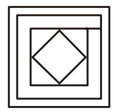
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



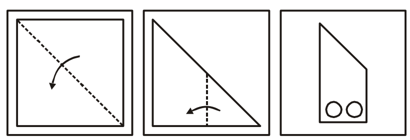
**Answer Figures :**

(1)  (2) 

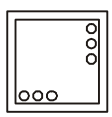
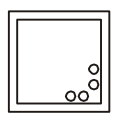
(3)  (4) 

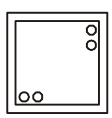
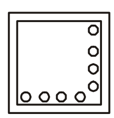
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



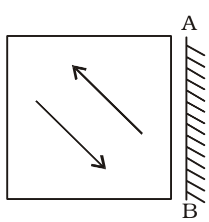
**Answer Figures :**

(1)  (2) 

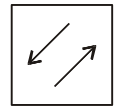
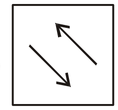
(3)  (4) 

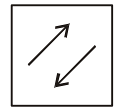
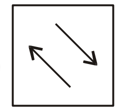
**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Martix–I are numbered from 0 to 4 and that of Matrix–II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'E' can be represented by 23, 41 etc., and 'P' can be represented by 56, 97, etc. Similarly, you have to identify the set of the word "**GREAT**".

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | E | R | G | L | O |
| 1 | G | L | E | O | R |
| 2 | R | O | L | E | G |
| 3 | L | G | O | R | E |
| 4 | O | E | R | G | L |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | M | P | S | T | A |
| 6 | P | S | T | A | M |
| 7 | T | M | A | S | P |
| 8 | S | A | M | P | T |
| 9 | A | T | P | M | S |

(1) 10, 14, 00, 59, 97
(2) 31, 33, 41, 67, 76
(3) 43, 01, 23, 95, 89
(4) 24, 42, 11, 86, 95

## GENERAL AWARENESS

**26.** Which of the following is called GDP Deflator?
(1) Ratio of nominal to real GDP
(2) Ratio of nominal to real GNP
(3) Ratio of nominal to real CPI
(4) Ratio of real to nominal GNP

**27.** Which organisation monitors the banks in actually maintaining cash balance?
(1) State Bank of India
(2) Reserve Bank of India
(3) Grameen Bank of India
(4) None of these

**28.** Which of the following Country doesn't have a written Constitution?
(1) United Kingdom
(2) Australia
(3) United States of America
(4) Bangladesh

**29.** In the Indian Parliamentary System, 'Vote on Account' is valid for how many months (except the year of elections)?
(1) 2 months
(2) 3 months
(3) 6 months
(4) 9 months

**30.** Taxila University was located between which two rivers?
(1) Indus and Jhelum
(2) Jhelum and Ravi
(3) Beas and Indus
(4) Satluj and Indus

**31.** Who is the most prominent god of 'Rig Veda'?
(1) Indra
(2) Agni
(3) Pashupati
(4) Vishnu

**32.** Which Indian state has the largest share of the Wastelands in India?
(1) Gujarat
(2) Andhra Pradesh
(3) Madhya Pradesh
(4) Rajasthan

**33.** Which is the highest peak in Andaman and Nicobar islands?
(1) Mount Koya
(2) Mount Diavolo
(3) Saddle Peak
(4) Mount Thuiller

**34.** How does a Unicellular Organism reproduce?
(1) Cell division
(2) Cell reproduction
(3) Cell synthesis
(4) Fragmentation

**35.** What is the full form of DNA?
(1) Diribo nucleic acid
(2) Di nucleic acid
(3) Dual nitrogen acid
(4) Deoxyribonucleic acid

**36.** Which among the following is/are female hormones?
(i) Estrogen
(ii) Progesterone
(iii) Testosterone
(1) (i) and (iii)
(2) (i) and (ii)
(3) (ii) and (iii)
(4) Only (iii)

**37.** For which of the following game, players must have the knowledge of Pascal's law?
(1) Climbing
(2) Paragliding
(3) Rafting
(4) Scuba diving

**38.** What is the value of the Least Distance of Distinct vision (in cm) for a normal human being?
(1) 2.5 (2) 25
(3) 58 (4) 60

**39.** What is the full form of ISDN?
(1) International Service Digital Network
(2) Indian Service Digital Network
(3) Integrated Service Digital Network
(4) Internal Service Digital Ne twork

**40.** Which among the following is used to treat Indigestion?
(1) Antacid (2) Antiseptic
(3) Analgesic (4) Antibiotic

**41.** Which of the following cannot be beaten into Sheets?
(1) Gold (2) Silver
(3) Potassium
(4) Aluminium

**42.** Minamata disease is a nervous disorder caused by eating fish, polluted with _____ .
(1) Iron (2) Mercury
(3) Lead (4) Nickel

**43.** Mahila Police volunteer scheme to be implemented in all states of the country has been launched on pilot basis firstly in which state?
(1) Delhi (2) Gujarat
(3) Haryana (4) Rajasthan

**44.** Who invented the Centigrade scale?
(1) Anders Celsius
(2) Daniel Gabriel Fahrenheit
(3) William Thomson
(4) Wright Brothers

**45.** Match the following :

| **Trophy/Cup** | **Sport** |
|---|---|
| 1. Irani Trophy | a. Football |
| 2. Santosh Trophy | b. Cricket |
| 3. Azlan Shah Cup | c. Hockey |

(1) 1–b, 2–c, 3–a
(2) 1–b, 2–a, 3–c
(3) 1–a, 2–c, 3–b
(4) 1–a, 2–b, 3–c

**46.** Jallikattu practiced in Tamil Nadu is a part of which festival?
(1) Onam
(2) Pongal
(3) Natuanjali
(4) Hampi

**47.** Who among the following was **NOT** one of the recipients of Major Dhyan Chand Lifetime Achievement Award for the year 2016?
(1) Rajendra Prahlad Shelke
(2) Sylvanus Dung Dung
(3) Sathi Geetha
(4) Amit Kumar

**48.** Who authored the book titled 'Jinnah often came to our House', which won the 2016 The Hindu Prize?
(1) Kiran Doshi
(2) Salman Rushdie
(3) K. Vijay Kumar
(4) Yasser Usman

**49.** With which country India has signed an agreement to renew the supply of Petroleum for a period of 5 years (i.e. till 2022)?
(1) Nepal (2) U.A.E.
(3) Iran (4) Bhutan

**50.** Which of the following neighbouring country of India is not a landlocked country?
(1) Nepal (2) Myanmar
(3) Bhutan (4) Afghanistan

## QUANTITATIVE APTITUDE

**51.** How many numbers are there from 300 to 700 which are divisible by 2, 3 and 7?
(1) 7 (2) 8
(3) 9 (4) 10

**52.** A and B do $\left(\frac{3}{5}\right)$th part of a work and the rest of the work is completed by C. If A, B and C take the same work for Rs. 5000, then what is the share of C (in Rs.)?
(1) 3000 (2) 2500
(3) 2000 (4) 1500

**53.** A solid cone of height 36 cm and radius of base 9 cm is melted to form a solid cylinder of radius 9 cm and height 9 cm. What per cent of material is wasted in this process?
(1) 25 (2) 0
(3) 5 (4) 10

**54.** A dealer sells a machine having marked price as Rs. 3840 at a discount of 20%. What is the selling price (in Rs.) of the machine?
(1) 3072 (2) 3500
(3) 4608 (4) 3240

**55.** In what ratio tea at Rs. 240 per kg. should be mixed with tea at Rs. 280 per kg. so that on selling the mixture at Rs. 324 per kg. there is a profit of 20%?
(1) 1 : 1 (2) 1 : 2
(3) 1 : 3 (4) 1 : 4

**56.** The average age of Ram and Rahim is 18 years. The average age of Rahim and Ramesh is 25 years. The average age of Ram and Ramesh is 29 years. What is the age (in years) of the oldest of the three?
(1) 14 (2) 22
(3) 28 (4) 36

**57.** Profit obtained on selling an article for Rs. 540 is equal to the loss incurred on selling the article for Rs. 370. If selling price is Rs. 910, then what is the profit per cent ?
(1) $16\frac{2}{3}$ (2) $33\frac{1}{3}$
(3) 50 (4) 100

**58.** In an examination 65% students pass in History and 55% students pass in Hindi. If 5% students fail in both the subjects, then what is the percentage of students who have passed in both the subjects?
(1) 15 (2) 20
(3) 25 (4) 30

**59.** Diameter of wheel of a cycle is 21 cm. The cyclist takes 45 minutes to reach a destination at a speed of 16.5 km./hr. How many revolutions will the wheel make during the journey?
(1) 12325 (2) 18750
(3) 21000 (4) 24350

**60.** A person invested a total sum of Rs. 7900 in three different schemes of simple interest at 3%, 5% and 8% per annum. At the end of one year he got same interest in all three schemes. What is the money (in Rs.) invested at 3%?
(1) 2900 (2) 3500
(3) 4000 (4) 5600

**61.** If $x + \left(\frac{1}{x}\right) = 2$, then what is the value of $x^{21} + \left(\frac{1}{x^{1331}}\right)$?
(1) 0 (2) 1
(3) 2 (4) 4

**62.** If $x^3 - y^3 = 81$ and $x - y = 3$, what is the value of $x^2 + y^2$?
(1) 18 (2) 21
(3) 27 (4) 36

**63.** If $\sqrt{5x-6} + \sqrt{5x+6} = 6$, then what is the value of $x$ ?
(1) –4 (2) 0
(3) 2 (4) 4

**64.** If $2x + \frac{1}{2x} = 2$, then what is the value of $\sqrt{2\left(\frac{1}{x}\right)^4 + \left(\frac{1}{x}\right)^5}$ ?
(1) 1 (2) 2
(3) 4 (4) 8

**65.** The side BC of ΔABC is produced to D. If ∠ACD = 114° and ∠ABC = $\left(\frac{1}{2}\right)$ ∠BAC, what is the value (in degrees) of ∠BAC?
(1) 36 (2) 48
(3) 76 (4) 84

**66.** O is the centre of the circle and two tangents are drawn from a point P to this circle at points A and B. If ∠AOP = 50°, then what is the value (in degrees) of ∠APB?
(1) 60 (2) 80
(3) 90 (4) 100

**67.** In ΔPQR, PQ = PR = 18 cm, AB and AC are parallel to lines PR and PQ respectively. If A is the mid-point of QR, then what is the perimeter (in cm) of quadrilateral ABPC?
(1) 18 (2) 28
(3) 32 (4) 36

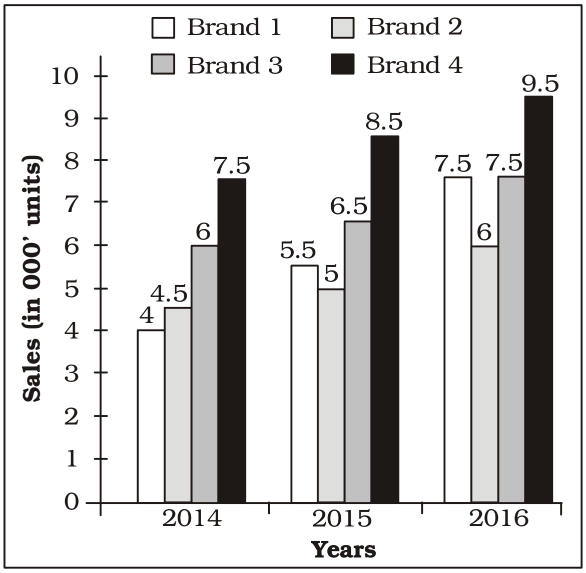
**68.** In ΔPQR, PS and PT are bisectors of ∠QPR and ∠QPS respectively. If ∠QPT = 30°, PT = 9 cm and TR = 15 cm, then what is the area (in $cm^2$) of ΔPTR?
(1) 36 (2) 54
(3) 72 (4) 216

**69.** What is the simplified value of $\left[\frac{2}{(\cot A - \tan A)}\right]$?
(1) sinA cosA
(2) tan2A
(3) $\tan^2 A$
(4) $\sin^2 A \cos^2 A$

**70.** What is the simplified value of $\sqrt{\frac{\operatorname{cosec} A - 1}{\operatorname{cosec} A + 1}}$ ?
(1) cosec A
(2) secA – tanA
(3) $\operatorname{cosec}^2 A$
(4) tanA – cosecA

**71.** What is the simplified value of $(\sec^4 A - \tan^2 A) - (\tan^4 A + \sec^2 A)$ ?
(1) –1 (2) $\frac{-1}{2}$
(3) 0 (4) 1

**Directions (72–75) :** The bar chart given below shows the sales (in '000 units) of 4 mobile brands for 3 years.




**72.** What is the percentage increase in the number of mobile phones of Brand 2 sold from 2014 to 2015?
(1) 8.33 (2) 33.33
(3) 37.5 (4) 11.11

**73.** What is the percentage increase in the total number of mobiles sold by these four brands from 2014 to 2016?
(1) 42.16
(2) 38.63
(3) 32.43
(4) 30.16

**74.** In 2017 the sales of each brand increased by the same percentage as it did in the year 2016. What will be the approximate average sales (in units) of mobiles per brand in year 2017?
(1) 9175 (2) 8360
(3) 9436 (4) 9678

**75.** If for any year, the sales of a brand is more than average sales of these four brands in that year, then it gets a star. Which brand has the maximum stars?
(1) Brand 3
(2) Brand 3 and 4 both
(3) Brand 4
(4) All brands

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

**76.** I was taken with surprise (1)/ when I saw (2)/ the beautiful Taj Mahal. (3)/ No Error (4)

**77.** I finished my household chores (1)/ before he reached (2)/ to my place after so long. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, each sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Being a _____ doctor, he never shirks work.
(1) conscious (2) conscience
(3) conscientious
(4) consensus

**79.** The meeting was presided _____ by the Chairman.
(1) over (2) upon
(3) of (4) in

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Vacillate**
(1) Continue (2) Playful
(3) Conclusive
(4) Irresolute

**81. Indomitable**
(1) Unconquerable
(2) Conflicting
(3) Falsification
(4) Intermittent

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Extenuate**
(1) Strengthen
(2) Enfeeble
(3) Abate (4) Acquit

**83. Fecund**
(1) Prolific
(2) Sterile
(3) Necessitate
(4) Turmoil

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

**84. The thin end of the wedge**.
(1) In strict vigilance
(2) Start of harmful development
(3) Be aware of the trick
(4) Not a worthy possession

**85. To accept the gauntlet**.
(1) To accept challenge
(2) To accept defeat
(3) To accept what is written in fate
(4) To be able to grasp the hidden meaning

**Directions (86–87) :** Improve the bracketed part of the sentence.

**86.** The **(reason of)** her outburst in the party is yet unknown.
(1) reason for
(2) reason to
(3) reason on
(4) No improvement

**87.** I left my job because I did not **(agree to)** the company's appraisal policies.
(1) agree about
(2) agree with (3) agree on
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. Speaking with a stammer or lisp.**
(1) Melliloquent
(2) Dentiloquent
(3) Fatiloquent
(4) Stuttering

**89. Excessive desire to work.**
(1) Ergomania
(2) Idolomania
(3) Islomania
(4) Ethnomania

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Pertinacious
(2) Demarcation
(3) Temperament
(4) Sureptitious

**91.** (1) Treachery (2) Refrendum
(3) Suppression
(4) Resemblance

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. While the Soviet Government bought grain and other foreign consumer goods to be sold in domestic markets at heavily subsidized rates, Russia rejected socialism.
Q. The oil industry was the prime target of a sweeping privatization drive launched after the break-up of the Soviet Union.
R. The Russian government has failed to do for its people even a fraction of what the Soviet Union, with twice the population, did with the revenue generated from oil.
S. However, not all Russian have been rolling in oil wealth.
(1) QSRP (2) PRQS
(3) RQSP (4) RSPQ

**93.** P. The recent reduction in interest rates in the US and the injection of liquidity have resulted in investors seeking new avenues such as commodity markets, in view of the turbulence in financial markets and the low returns in treasuries.
Q. The relatively easy liquidity and low interest rates, by themselves, make holding of inventories attractive and thus induce volatility in commodity markets.
R. The financialisation of commodity trade and current extraordinary conditions in global financial markets could have influenced the spurt in prices.
S. The weakening of the US dollar is also advanced as a reason for the recent volatility in commodity markets, including food items.
(1) PRQS (2) SPQR
(3) QSPR (4) RPQS

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**I hope that I shall win this dance competition.**
(1) It is hoped that the dance competition will be won by me.
(2) Winning the dance competition is hoped by me.
(3) Dance competition winning is my hope.
(4) The dance competition is hoped to be won.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**He said, "Let it rain I have to go."**
(1) He persisted that he did not care for the rain and he had to go.
(2) He said that rain can't stop him to go out.
(3) He exclaimed that let it rain but he will go .
(4) He said that he can't go just because it is raining.

**Directions (96–100) :** In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blanks (numbered) out of the four alternatives.

India's motto has been Vasudeva Kutumbakam or that the whole world is **(96)** community. There are a **(97)** of pillars upon which India's policy of living in peace with and **(98)** peace among nations of the world rests. Policies of non-alignment, peaceful co-existence, economic and cultural cooperation disarmament and peaceful **(99)** of nuclear energy, **(100)** of International disputes through negotiations and peaceful means are some of the salient features that give credence to India's commitment to world peace.

**96.** (1) one (2) distinct
(3) essential (4) significant

**97.** (1) numerous (2) number
(3) many (4) loop

**98.** (1) disturbing
(2) allowing (3) generating
(4) promoting

**99.** (1) uses (2) disruption
(3) sources (4) negotiation

**100.** (1) urge
(2) requirement
(3) settlement
(4) enactment

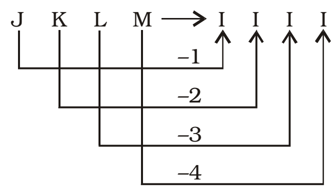
## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (3) | **2.** (2) | **3.** (2) | **4.** (1) |
| **5.** (2) | **6.** (3) | **7.** (1) | **8.** (2) |
| **9.** (3) | **10.** (2) | **11.** (1) | **12.** (3) |
| **13.** (2) | **14.** (3) | **15.** (1) | **16.** (2) |
| **17.** (2) | **18.** (4) | **19.** (4) | **20.** (1) |
| **21.** (1) | **22.** (3) | **23.** (4) | **24.** (3) |
| **25.** (3) | **26.** (1) | **27.** (2) | **28.** (1) |
| **29.** (1) | **30.** (1) | **31.** (1) | **32.** (4) |
| **33.** (3) | **34.** (1) | **35.** (4) | **36.** (2) |
| **37.** (4) | **38.** (2) | **39.** (3) | **40.** (1) |
| **41.** (3) | **42.** (2) | **43.** (3) | **44.** (1) |
| **45.** (2) | **46.** (2) | **47.** (4) | **48.** (1) |
| **49.** (1) | **50.** (2) | **51.** (3) | **52.** (3) |
| **53.** (1) | **54.** (1) | **55.** (3) | **56.** (4) |
| **57.** (4) | **58.** (3) | **59.** (2) | **60.** (3) |
| **61.** (3) | **62.** (2) | **63.** (3) | **64.** (4) |
| **65.** (3) | **66.** (2) | **67.** (4) | **68.** (2) |
| **69.** (2) | **70.** (2) | **71.** (3) | **72.** (4) |
| **73.** (2) | **74.** (1) | **75.** (3) | **76.** (1) |
| **77.** (1) | **78.** (3) | **79.** (1) | **80.** (4) |
| **81.** (1) | **82.** (1) | **83.** (2) | **84.** (2) |
| **85.** (1) | **86.** (1) | **87.** (2) | **88.** (4) |
| **89.** (1) | **90.** (4) | **91.** (2) | **92.** (1) |
| **93.** (4) | **94.** (1) | **95.** (1) | **96.** (1) |
| **97.** (2) | **98.** (4) | **99.** (1) | **100.** (3) |

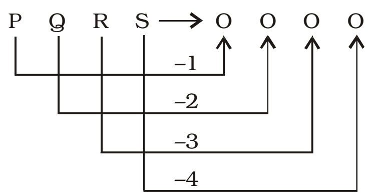
## EXPLANATIONS

**1.** (3) Several pages together constitute a book dealing with a particular subject. Similarly, several countries are included in a continent.

**2.** (2)




Similarly,




**3.** (2) $(4)^2 + 1 = 16 + 1 = 17$
Similarly,
$(7)^2 + 1 = 49 + 1 = 50$

**4.** (1) Except the word pair 'Sad : Hopeful', in all other word – pairs, the second word is of higher degree (intensity) than that of the first word.

**5.** (2) $F \xrightarrow{+2} H \xrightarrow{+2} J$

$J \xrightarrow{+2} L \xrightarrow{+2} N$

$N \xrightarrow{+2} P \xrightarrow{+2} R$

But,

$L \xrightarrow{+2} N \xrightarrow{+3} Q$

**6.** (3) Except the number–pair '19–391', in all other number–pairs, the second number is the perfect square of the first number.
$11 \Rightarrow (11)^2 = 121$
$13 \Rightarrow (13)^2 = 169$
$21 \Rightarrow (21)^2 = 441$
But, $(19)^2 = 361$



**7.** (1) Arrangement of words as per order in the dictionary :
1. Feeble
↓
3. Floor
↓
5. Fluorescent
↓
4. Foam
↓
2. From

**8.** (2)
$A \xrightarrow{+4} E \xrightarrow{+4} I \xrightarrow{+4} M \xrightarrow{+4} \boxed{Q}$

**9.** (3) $1 + 2 = 3$
$3 + 3 = 6$
$6 + 5 = 11$
$11 + 7 = 18$
$18 + 11 = \boxed{29}$

The series is based on addition of successive Prime Numbers.

**10.** (2) The son of Ritika's grandfather's (paternal) only son means brother of Ritika. Therefore, Ritika is the sister of that man.

**11.** (1) Suppose, the weight of Book 3 is $x$.
The weight of Book 2 $\Rightarrow 2x$
The weight of Book 1 $\Rightarrow 2 \times 2x = 4x$
According to the question,
$= 2x + 60 = 4x - 60$
$\Rightarrow 4x - 2x = 60 + 60$
$\Rightarrow 2x = 120$
$\therefore x = \frac{120}{2} = 60$
Book 3 = 60
Book 2 = $2x = 2 \times 60 = 120$
Book 4 = $2x + 60$
$= 120 + 60 = 180$
Book 1 = $4x = 4 \times 60 = 240$
Clearly, Book 1 is the heaviest.

**12.** (3) There is no 'A' letter in the given word. Therefore, the word IMPORTANT cannot be formed.

I M [P R O] V [E] M E N T ⇒ ROPE

[I M] P [R] O V E M E N [T] ⇒ TRIM

I M [P R O V E] M E N T ⇒ PROVE

**13.** (2)

| M | A | S | T | E | R |
|---|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 6 | 8 | 2 | 1 | 4 | 5 |

| S | T | A | M | P |
|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ |
| 2 | 1 | 8 | 6 | 9 |

Therefore,

| P | A | S | T | E |
|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ |
| 9 | 8 | 2 | 1 | 4 |

**14.** (3)

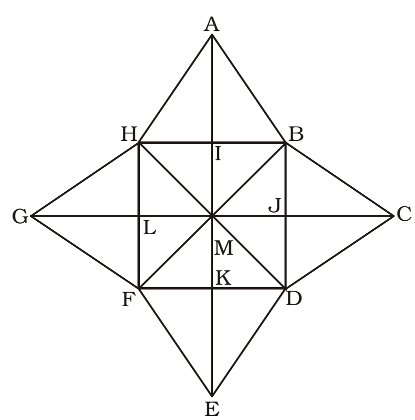
| K ⇒ × | M ⇒ – |
|---|---|
| J ⇒ + | L ⇒ ÷ |

44 M 24 K 56 L 14 J 60 = ?
$\Rightarrow ? = 44 - 24 \times 56 \div 14 + 60$
$\Rightarrow ? = 44 - 24 \times 4 + 60$
$\Rightarrow ? = 44 - 96 + 60$
$\Rightarrow ? = 104 - 96 = \boxed{8}$

**15.** (1) 27 (15) 33
$\Rightarrow 2 + 7 + 3 + 3 = 15$
41 (13) 53
$\Rightarrow 4 + 1 + 5 + 3 = 13$
Therefore,
26 (A) 35
$\Rightarrow A = 2 + 6 + 3 + 5 = 16$

**16.** (2) First Figure
$3 + 2 + 5 + 4 + 1 + 7 = 22$
Second Figure
$1 + 2 + 7 + 6 + 4 + 2 = 22$
Third Figure
$2 + 1 + 3 + 11 + 1 + ? = 22$
$\Rightarrow ? = 22 - 18 = \boxed{4}$

**17.** (2)




The triangles are :
ΔAIH; ΔAIB; ΔAHB; ΔCJB; ΔCJD; ΔCBD; ΔEKD; ΔEKF;

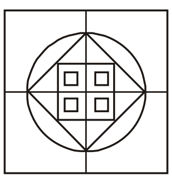
ΔEDF; ΔGLF; ΔGLH; ΔGFH; ΔHLM; ΔIMH; ΔBIM; ΔBJM; ΔDKM; ΔDJM; ΔFKM; ΔFLM; ΔMBH; ΔMBD; ΔMFD; ΔMFH; ΔHFD; ΔHBD; ΔBHF; ΔBDF; ΔHGM; ΔHMA; ΔBMC; ΔBAM; ΔDCM; ΔDME; ΔFEM; ΔFMG;
Thus, there are 36 triangles in the given figure.

**18.** (4) Both the Premises are Particular Affirmative (I–type). No Conclusion follows from the two Particular Premises.
Thus, neither Conclusion I nor Conclusion II follows.

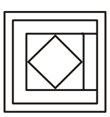
**19.** (4) From the two positions of the same cube, it is clear that β lies opposite δ. Rotate the first cube twice vertically.

**20.** (1) Cardboard boxes that are not white can be represented by the number common to triangle and circle but outside the rectangle. Such number is '6'.

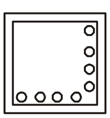
**21.** (1)



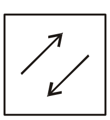
**22.** (3)



**23.** (4)



**24.** (3)



**25.** (3) G ⇒ 02, 10, 24, 31, 43
R ⇒ 01, 14, 20, 33, 42
E ⇒ 00, 13, 23, 34, 41
A ⇒ 59, 68, 77, 86, 95
T ⇒ 58, 67, 75, 89, 96

| Option | G | R | E | A | T |
|---|---|---|---|---|---|
| (1) | 10 | 14 | 00 | 59 | 97 |
| (2) | 31 | 33 | 41 | 67 | 76 |
| (3) | 43 | 01 | 23 | 95 | 89 |
| (4) | 24 | 42 | 11 | 86 | 95 |

**26.** (1) The Gross Domestic Product (GDP) deflator is a measure of general price inflation. It is calculated by dividing nominal GDP by real GDP and then multiplying by 100. Nominal GDP is the market value of goods and services produced in an economy, unadjusted for inflation (It is the GDP measured at current prices). Real GDP is nominal GDP, adjusted for inflation to reflect changes in real output (It is the GDP measured at constant prices).
GDP Deflator

$$= \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

**27.** (2) The Reserve Bank of India sees that the banks maintain a minimum cash balance out of the deposits they receive. It monitors that the banks actually maintain the cash balance. Similarly, it sees that the banks give loans not just to profit making businesses and traders but also to small cultivators, small scale industries, to small borrowers, etc.

**28.** (1) The United Kingdom does not have one specific constitutional document named as such. Instead, the so-called constitution of the United Kingdom is a sum of laws and principles that make up the country's body politic. This is sometimes referred to as an "unwritten" or uncodified constitution. The British constitution primarily draws from four sources: statute law (laws passed by the legislature), common law (laws established through court judgments), parliamentary conventions, and works of authority.

**29.** (1) The Vote on Account is the special provision given to the government to obtain the vote of Parliament to withdraw money when the budget for the new financial year is not released or the elections are underway, and the caretaker government is in place. Normally, it stays valid for two months but however, it can be extended if the year is an election year and it is anticipated that the main demand and the appropriation bill will take longer to be passed by the house.

**30.** (1) Taxila University, the world's oldest university, was situated between the Indus and Jhelum (Hydaspes) rivers. It flourished from 600 BC to 500 A.D in the kingdom of Gandhara. 68 subjects were taught at this university and the minimum entry age, ancient texts show, was 16. At one stage, it had 10,500 students including those from Babylon, Greece, Syria, and China.

**31.** (1) The anthropomorphic god Indra was the most important god during the Rig Vedic period. He played the role of a warlord, leading the Aryan soldiers to victory against the demons. About 289 hymns are devoted to him in the Rig Veda, the most for any divinity. He was associated with thunder and storm.

**32.** (4) With 84,929 sq.km of area under wastelands, Rajasthan has the largest area under wasteland. Jammu and Kashmir (75,436 km2), Madhya Pradesh (40,113 km2) and Maharashtra (37,831 km2) come next in terms of area under wasteland.

**33.** (3) Saddle Peak, located on North Andaman Island, is the highest peak of Andaman and Nicobar Islands. With a height of 732 metres, it is the highest point of the archipelago in the Bay of Bengal. It is surrounded by Saddle Peak National Park.

**34.** (1) Unicellular organisms reproduce by asexual means. This asexual mode of reproduction involves cell division in which single parent produce their offspring. For simple uni-

cellular microorganisms such as the amoeba, one cell division is equivalent to reproduction – an entire new organism is created. Different asexual modes of reproduction include binary fission, multiple fission, fragmentation, budding etc.

**35.** (4) DNA stands for Deoxyribonucleic acid. It is a nucleic acid that carries the genetic instructions used in the growth, development, functioning and reproduction of all known living organisms and many viruses. DNA and another nucleic acid RNA are one of the four major types of macromolecules that are essential for all known forms of life along with proteins, lipids and complex carbohydrates (polysaccharides).

**36.** (2) There are several hormones in females which are naturally produced and secreted by the glands of the endocrine system. Among them, estrogen, and progesterone are secreted for the influence on a woman's reproductive health and are termed as female sex hormones. Estrogen and progesterone are made by the ovaries.

**37.** (4) Pascal's law is a principle in fluid mechanics that states that a pressure change occurring anywhere in a confined incompressible fluid is transmitted throughout the fluid such that the same change occurs everywhere. Scuba divers must understand this principle. At a depth of 10 metres under water, pressure is twice the atmospheric pressure at sea level, and increases by about 100 kPa for each increase of 10 metres depth.

**38.** (2) The minimum distance of an object from eye to have its clear image is called "Least Distance of Distinct Vision". This distance is about 25 cm from the eye. If the object is held closer to the eye than this distance the image formed will be blurred and fuzzy. The location of the near point, however, changes with age.

**39.** (3) ISDN stands for Integrated Services Digital Network. It is a set of communication standards for simultaneous digital transmission of voice, video, data, and other network services over the traditional circuits of the public switched telephone network. The key feature of ISDN is that it integrates speech and data on the same lines, not available in the classic telephone system.

**40.** (1) An antacid is a substance which neutralizes stomach acidity, used to relieve heartburn, indigestion or an upset stomach. They contain ingredients such as aluminium, calcium, or magnesium which act as bases (alkalis) to counteract the stomach acid and lower pH. They work quickly and are used to relieve symptoms of acid reflux, heartburn or indigestion (dyspepsia).

**41.** (3) Substances that can be beaten into thin sheets are called malleable. Most metals are malleable. Gold and Silver are the most malleable metals. Next in the list are aluminium and copper. Sodium and potassium are soft metals that can be cut with knife.

**42.** (2) Minamata disease is a neurological syndrome caused by severe mercury poisoning. Symptoms include ataxia, numbness in the hands and feet, general muscle weakness, narrowing of the field of vision and damage to hearing and speech. The disease is named after Minamata city in Kumamoto prefecture, Japan, where it was first discovered in 1956.

**43.** (3) Haryana, in December 2016, became the first state in the country to adopt Centres Mahila Police Volunteer scheme and inducted 950 women, who will work as a link between the people and the police. The scheme is an initiative to appoint special 'Mahila' protection officer in every village to provide a link between police and women in distress.

**44.** (1) Swedish astronomer Anders Celsius invented the Celsius temperature scale in 1742 A.D. The Celsius scale invented by him has 100 degrees between the freezing point (0 C) and boiling point (100 C) of pure water at sea level air pressure. The term "Celsius" was adopted in 1948 by an international conference on weights and measures.

**45.** (2) Irani Trophy : a cricket tournament conceived during the 1959-60 season to mark the completion of 25 years of the Ranji Trophy; Santosh Trophy: a knock-out football competition contested by the regional state associations and government institutions in India; Azlan Shah Cup: an annual international men's field hockey tournament held in Malaysia.

**46.** (2) Jallikattu is a bull taming event typically practiced in Tamil Nadu as a part of Pongal celebrations on Mattu Pongal day, third day of the four-day Pongal festival. The term 'Jallikattu' is derived from the Tamil words 'Jalli' (gold or silver coins) and 'Kattu' (means 'tied').

**47.** (4) Sylvanus Dung Dung (Hockey), Sathi Geetha (Athletics) and Rajendra Prahlad Shelke (Rowing) won the Major Dhyan Chand Lifetime Achievement Award for the year 2016. The award is named after Dhyan Chand (1905–79), an Indian field hockey player who scored more than 1000 goals during a career which spanned over 20 years from 1926 to 1948.

**48.** (1) The book "Jinnah Often Came to Our House" has been authored by Kiran Doshi, a former Indian Foreign Service Officer. It provides a glimpse on the personal life of Muhammad Ali Jinnah, the founder of Pakistan. It is set against the political turmoil of the subcontinent from the early part of the 20th century, ending with the Partition and Independence.

**49.** (1) India and Nepal, in March 2017, agreed to deepen energy ties by renewing India's fuel sale deal with the Himalayan country by another five years and assist in implementing a cooking gas-for poor scheme akin to Ujjwala scheme in India. As per the agreement, Indian Oil Corp oration. will supply about 1.3 million tonnes of fuel every year for the next five years to Nepal.

**50.** (2) Myanmar is not a land-locked country. It is bordered by India and Bangladesh to its west, Thailand and Laos to its east and China to its north and northeast. To its south, about one third of Myanmar's total perimeter of 5,876 km forms an uninterrupted coastline of 1,930 km along the Bay of Bengal and the Andaman Sea.

**51.** (3) LCM of 2, 3 and 7 = 42

Number of numbers divisible by 42 from 1 to 700 = 16

42 ) 700 (16
42
280
252
28

Number of numbers divisible by 42 from 1 to 299 = 7

42 ) 299 (7
294
5

$\therefore$ Required answer

= 16 – 7 = 9

**52.** (3) (A + B)'s work = $\frac{3}{5}$th part

$\therefore$ C's work = $\frac{2}{5}$th part

$\therefore$ C's share = Rs. $\left(\frac{2}{5} \times 5000\right)$

= Rs. 2000

**53.** (1) Volume of solid cone

$= \frac{1}{3}\pi r^2 h$

$= \frac{1}{3}(\pi \times 9 \times 9 \times 36)$ cu. cm.

= $972\pi$ cu. cm.

Volume of cylinder

= $\pi R^2 H$

= $\pi \times 9 \times 9 \times 9$ cu. cm.

= $729\pi$ cu. cm.

Wastage

= $(972\pi - 729\pi)$ cu. cm.

= $243\pi$ cu. cm.

Percentage wastage

$= \frac{243\pi}{972\pi} \times 100 = 25\%$

**54.** (1) S.P. of machine = 80% of Rs. 3840

= Rs. $\left(\frac{3840 \times 80}{100}\right)$

= Rs. 3072

**55.** (3) C.P. of mixture

$= \frac{324 \times 100}{120}$ = Rs. 270 per kg.

By alligation rule,

240      280

270

280–270=10      270–240=30

$\therefore$ Required ratio

= 10 : 30 = 1 : 3

**56.** (4) (Ram + Rahim)'s age = 36 years .... (i)

(Rahim + Ramesh)'s age = 50 years .... (ii)

(Ramesh + Ram)'s age = 58 years .... (iii)

On adding all three,

2 (Ram + Rahim + Ramesh)'s age

= (36 + 50 + 58) years

= 144 years

$\therefore$ (Ram + Rahim + Ramesh)'s age = 72 years ..... (iv)

$\therefore$ Ramesh's age

= Equation (iv) – (i).

= 72 – 36 = 36 years

**57.** (4) C.P. of article = Rs. $x$

According to the question,

$540 - x = x - 370$

$\Rightarrow 2x = 540 + 370 = 910$

$\Rightarrow x = \frac{910}{2}$ = Rs. 455

Now, S.P. = Rs. 910

$\therefore$ Profit per cent

$= \left(\frac{910 - 455}{455}\right) \times 100$

= 100%

**58.** (3) Percentage of students who pass in History or Hindi or both = 95

$\therefore n(A \cup B)$

$= n(A) + n(B) - n(A \cap B)$

$\Rightarrow 95 = 65 + 55 - n(A \cap B)$

$\Rightarrow n(A \cap B) = 120 - 95 = 25$

**59.** (2) Speed of cycle

= 16.5 kmph.

$= \left(\frac{16.5 \times 1000}{60}\right)$ metre/minute

= 275 metre/minute

$\therefore$ Distance covered in 45 minutes

= (275 × 45) metre

= 12375 metre

Distance covered by wheel in one revolution = $\pi$ × diameter

$= \frac{22}{7} \times 21 = 66$ cm.

$\therefore$ Number of revolutions

$= \frac{12375 \times 100 \text{cm.}}{66 \text{cm.}} = 18750$

**60.** (3) Ratio of the rates of S.I.

= 3 : 5 : 8

$\therefore$ Ratio of investments

$= \frac{1}{3} : \frac{1}{5} : \frac{1}{8}$

= 40 : 24 : 15

Sum of the terms of ratio

= 40 + 24 + 15 = 79

$\therefore$ Investment at the rate of 3% p.a.

$= \text{Rs. } \left(\frac{40}{79} \times 7900\right)$

= Rs. 4000

**61.** (3) $x + \frac{1}{x} = 2 \Rightarrow x^2 + 1 = 2x$

$\Rightarrow x^2 - 2x + 1 = 0$

$\Rightarrow (x - 1)^2 = 0$

$\Rightarrow x - 1 = 0 \Rightarrow x = 1$

$\therefore x^{21} + \frac{1}{x^{1331}} = 1 + 1 = 2$

**62.** (2) $x^3 - y^3 = 81$;

$x - y = 3$

$\therefore (x - y)^3 = 27$

$\Rightarrow x^3 - y^3 - 3xy(x - y) = 27$

$\Rightarrow 81 - 3xy(3) = 27$

$\Rightarrow 9xy = 81 - 27 = 54$

$\Rightarrow xy = \frac{54}{9} = 6$

$\therefore x^2 + y^2 = (x - y)^2 + 2xy$

$= 9 + 2 \times 6 = 9 + 12 = 21$

**63.** (3) $\sqrt{5x-6} + \sqrt{5x+6} = 6$

Of the given options.
when $x = 2$
L.H.S.

$= \sqrt{5 \times 2 - 6} + \sqrt{5 \times 2 + 6}$

$= \sqrt{4} + \sqrt{16} = 2 + 4$

= 6 = R.H.S.

**64.** (4) $2x + \frac{1}{2x} = 2$

$\Rightarrow 4x^2 + 1 = 4x$

$\Rightarrow 4x^2 - 4x + 1 = 0$

$\Rightarrow (2x - 1)^2 = 0$

$\Rightarrow 2x - 1 = 0 \Rightarrow x = \frac{1}{2}$

$\therefore \frac{1}{x} = 2$

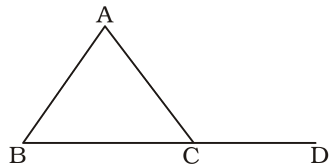
$\therefore$ Expression

$= \sqrt{2\left(\frac{1}{x}\right)^4 + \left(\frac{1}{x}\right)^5}$

$= \sqrt{2 \times 2^4 + 2^5} = \sqrt{32 + 32}$

$= \sqrt{64} = 8$

**65.** (3)




$\angle ACD = 114°$

$\angle ABC = \frac{1}{2} \angle BAC$

Exterior angle = Sum of two other interior angles

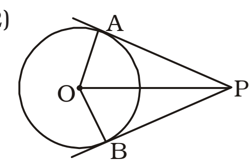
$\therefore \angle ABC + \angle BAC = \angle ACD$

$\Rightarrow \frac{1}{2} \angle BAC + \angle BAC = 114°$

$\Rightarrow \frac{3}{2} \angle BAC = 114°$

$\Rightarrow \angle BAC = \frac{114 \times 2}{3} = 76°$

**66.** (2)



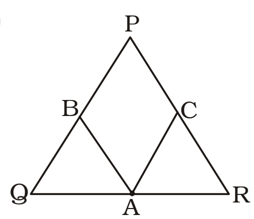

$\angle AOP = \angle POB = 50°$

$\Rightarrow \angle AOB = 100°$

$\angle AOB + \angle APB = 180°$

$\Rightarrow \angle APB = 180° - 100° = 80°$

**67.** (4)




PQ = PR = 18 cm.

AB | | PR

$\therefore$ B is the mid-point of PQ.

$\therefore AB = \frac{1}{2} PR = 9$ cm.

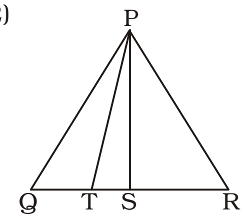
Similarly,

$AC = \frac{1}{2} PQ = 9$ cm.

$\therefore$ AB = BP = PC = CA = 9 cm.

$\therefore$ Perimeter of parallelogram ABPC = 4 × 9 = 36 cm.

**68.** (2)




$\angle QPT = \angle TPS = 30°$

$\therefore \angle SPR = 60°$

$\therefore \angle TPR = \angle SPR + \angle TPS = 90°$

In $\Delta PTR$,

$PR = \sqrt{TR^2 - PT^2}$

$= \sqrt{15^2 - 9^2} = \sqrt{(15+9)(15-9)}$

$= \sqrt{24 \times 6} = \sqrt{4 \times 6 \times 6}$

= 12 cm.

$\therefore$ Area of $\Delta PTR = \frac{1}{2} PT \times PR$

$= \frac{1}{2} \times 9 \times 12 = 54$ sq. cm.

**69.** (2) Expression

$= \frac{2}{\cot A - \tan A}$

$= \frac{2}{\frac{1}{\tan A} - \tan A}$

$= \frac{2}{\frac{1 - \tan^2 A}{\tan A}} = \frac{2\tan A}{1 - \tan^2 A}$

= tan2A

**70.** (2) Expression

$= \sqrt{\frac{\text{cosec}A - 1}{\text{cosec}A + 1}}$

$= \sqrt{\frac{\frac{1}{\sin A} - 1}{\frac{1}{\sin A} + 1}} = \sqrt{\frac{1 - \sin A}{1 + \sin A}}$

$= \sqrt{\frac{(1 - \sin A)(1 - \sin A)}{(1 + \sin A)(1 - \sin A)}}$

(On rationalising the denominator)

$= \sqrt{\frac{(1 - \sin A)^2}{1 - \sin^2 A}} = \frac{1 - \sin A}{\sqrt{\cos^2 A}}$

$= \frac{1 - \sin A}{\cos A} = \frac{1}{\cos A} - \frac{\sin A}{\cos A}$

$= \sec A - \tan A$

**71.** (3) Expression

$= \sec^4 A - \tan^2 A - \tan^4 A - \sec^2 A$

$= \sec^4 A - \tan^4 A - \tan^2 A - \sec^2 A$

$= (\sec^2 A - \tan^2 A)(\sec^2 A + \tan^2 A) - \tan^2 A - \sec^2 A$

$= \sec^2 A + \tan^2 A - \tan^2 A - \sec^2 A$

$= 0$

**72.** (4) Required percentage increase $= \left(\frac{5 - 4.5}{4.5}\right) \times 100$

$= \frac{0.5}{4.5} \times 100 = \frac{100}{9} = 11.11\%$

**73.** (2) Number of mobile phones sold of all brands :

Year 2014

$\Rightarrow (4 + 4.5 + 6 + 7.5)$ thousands

= 22 thousands

Year 2016

$\Rightarrow (7.5 + 6 + 7.5 + 9.5)$ thousands

= 30.5 thousands

∴ Required percentage increase

$= \left(\frac{30.5 - 22}{22}\right) \times 100$

$= \frac{8.5 \times 100}{22}$

$= \frac{425}{11} = 38.636\%$

**74.** (1) Percentage increase in 2016 :

Brand 1 $\Rightarrow \left(\frac{7.5 - 5.5}{5.5}\right) \times 100$

$= \frac{200}{5.5} = \frac{2000}{55} = 36.36$

Brand 2 $\Rightarrow \frac{6 - 5}{5} \times 100 = 20\%$

Brand 3 $\Rightarrow \left(\frac{7.5 - 6.5}{6.5}\right) \times 100$

$= 15.38\%$

Brand 4 $\Rightarrow \left(\frac{9.5 - 8.5}{8.5}\right) \times 100$

$= 11.76\%$

∴ Total sales in 2017

$= \left(\frac{7.5 \times 136.36}{100} + \frac{6 \times 120}{100} + \frac{7.5 \times 115.38}{100} + \frac{9.5 \times 111.76}{100}\right)$ thousands

$= (10.2 + 7.2 + 8.6 + 10.6)$ thousands

= 36.6 thousands

Average $= \frac{36.6 \times 1000}{4} = 9150$

∴ Required answer

= 9175

**75.** (3) There is maximum sales of brand 4 each year.

It will have a maximum of 3 stars.

**76.** (1) **Take somebody/something by surprise** = to attack or capture somebody/something unexpectedly; to surprise somebody.

Hence, I was taken by surprise ....... should be used here.

**77.** (1) When two events happen in the past simultaneously, the earlier event is expressed in Past Perfect.

Hence, I had finished my household chores ...... should be used here.

**78.** (3) **Conscientious (Adjective)** = wishing to do one's duty well and thoroughly; putting a lot of effort into your work.

**80.** (4) **Vacillate (Verb)** = to be uncertain what to do or to change often between two opinions; be irresolute; be undecided.

**Look at the sentence :**

Her mood vacillated between hope and despair.

**81.** (1) **Indomitable (Adjective)** = impossible to subdue or defeat; invincible; unconquerable.

**Look at the sentence :**

The indomitable Gandhi said, he would continue to fight for justice.

**82.** (1) **Extenuate (Verb)** = make thin; to lessen the seriousness; mitigate; weaken.

**Strengthen (Verb)** = make or become stronger or more effective.

**Look at the sentences :**

He was unable to say anything that might have extenuated his rudeness.

His battle against cancer has strengthened his belief in God.

**83.** (2) **Fecund (Adjective)** = able to produce a lot of crops, fruit, babies etc.; fertile.

**Sterile (Adjective)** = not able to produce children or young; unable to produce plants or crops.

**Look at the sentences :**

Fecund soil of this region has brought prosperity.

One of the side-effects of the drug could be to make men sterile.

**84.** (2) **The thin end of the wedge** = the beginning of a harmful development.

**Look at the sentence :**

Identity cards for students could be the thin end of the wedge-soon everyone might have to carry identification.

**85.** (1) **To accept the gauntlet** = to agree to fight or compete with someone; accepting and agreeing; to accept a challenge.

**Look at the sentence :**

He doesn't read Greek, but he took up the gauntlet and did his best to understand the letter, anyway.

**86.** (1) Here, the appropriate preposition is **for**.

**87.** (2) Here, agree with ...... should be used.

**Look at the sentence :**

I agree with her analysis of the situation.

**90.** (4) **Surreptitious (Adjective)** = kept secret.

**91.** (2) **Referendum (Noun)** = public vote; plebiscite.

**94.** (1) I hope ⇒ It is hoped

I shall win this dance competition ⇒ the dance competition will be won by me.

Structure = Subject + will/shall + be + $V_3$ + by + Object.

❑❑❑

**SET 20**

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 16.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Sheep : Lamb : : Cow : ?
(1) Kitten (2) Cub
(3) Calf (4) Caterpillar

**2.** In the following question, select the related letters from the given alternatives :
PRAG : QTDK : : STOP : ?
(1) LMNP (2) BDFE
(3) TVRT (4) QSTG

**3.** In the following question, select the related number from the given alternatives :
562 : 30 : : 663 : ?
(1) 44 (2) 49
(3) 54 (4) 58

**4.** In the following question, select the odd word from the given alternatives :
(1) Cricket
(2) Carrom
(3) Table Tennis
(4) Chess

**5.** In the following question, select the odd letters from the given alternatives :
(1) IMX (2) DHS
(3) GWK (4) KOZ

**6.** In the following question, select the odd number–pair from the given alternatives :
(1) 122 – 1331
(2) 173 – 2197
(3) 197 – 2744
(4) 290 – 4913

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Xenons 2. Xylyls
3. Xanthic 4. Xenians
5. Xyst
(1) 34125 (2) 34521
(3) 43251 (4) 51342

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
LOQ, SVX, ZCE, ?
(1) GJL (2) GLJ
(3) GTL (4) JLG

**9.** In the following question, select the missing number from the given alternatives :
13, 27, 56, 115, ?
(1) 224 (2) 231
(3) 233 (4) 234

**10.** Sumitra remembers that her mother's birthday is after 13th February but before 16th February but her brother remembers that his mother's birthday is after 14th February but before 17th February. On which date Sumitra's mother's birthday will be celebrated?
(1) 13th February
(2) 14th February
(3) 15th February
(4) 17th February

**11.** There are five energy drinks – Red, Moto, Energy, Lion and Bull – containing different range of sugar content. Moto is having sugar content more than all other drinks. Energy is having the sugar content only more than the Lion. Bull is not having sugar content more than the Red. Which of the following drink is having the second most sugar content?
(1) Bull (2) Energy
(3) Red (4) Moto

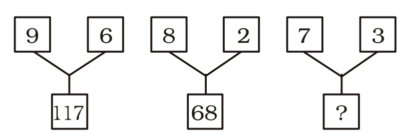
**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**CALCULATING**
(1) GAIN (2) TANING
(3) TAIL (4) CULT

**13.** In a certain code language, "WILDHORN" is written as "1133" and "RAPTURE" is written as "1089". How is "PORT-LOUIS" written in that code language?
(1) 1395 (2) 1485
(3) 1584 (4) 1595

**14.** If "A" denotes "subtracted from", "B" denotes "added to", "C" denotes "divided by" and "D" denotes "multiplied by", then which of the following statement is correct?
(1) 3 A 12 B 16 D 17 C 1 = 163
(2) 5 C 7 A 9 D 8 B 2 = 294
(3) 13 C 13 A 13 B 13 D 13 = 157
(4) 18 C 16 D 49 A 27 B 9 = 200

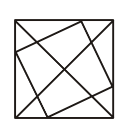
**15.** If $9 * 2 * 5 = 23$ and $1 * 4 * 8 = 29$, then
$1 * 6 * 3 = ?$
(1) 19 (2) 21
(3) 31 (4) 39

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives :




(1) 48 (2) 52
(3) 55 (4) 58

**17.** How many triangles are there in the given figure ?



(1) 20 (2) 23
(3) 24 (4) 26

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

**Statements :**

I. All LEDs are bulbs.

II. Some bulbs are not tube lights.

**Conclusions :**

I. Some tube lights are LEDs.

II. All LEDs are tube lights.

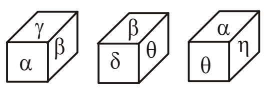
(1) Only Conclusion I follows.

(2) Only Conclusion II follows.

(3) Neither Conclusion I nor Conclusion II follows.

(4) Both Conclusions follow.

**19.** Three positions of a cube are shown below. What will come opposite to face containing 'α'?

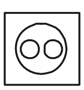
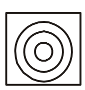


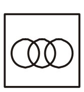
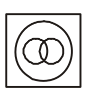
(1) β (2) δ

(3) η (4) θ

**20.** Identify the diagram that best represents the relationship among the given classes.

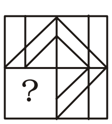
Pet animals, Dog, Cat

(1)  (2) 

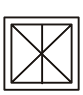
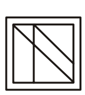
(3)  (4) 

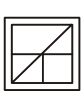
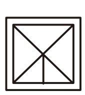
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



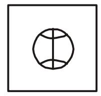
**Answer Figures :**

(1)  (2) 

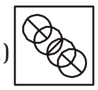
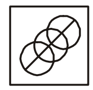
(3)  (4) 

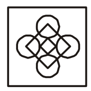
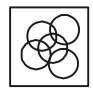
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



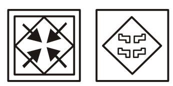
**Answer Figures :**

(1)  (2) 

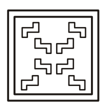
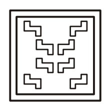
(3)  (4) 

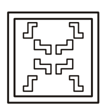
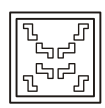
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



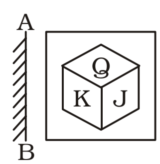
**Answer Figures :**

(1)  (2) 

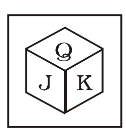
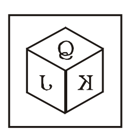
(3)  (4) 

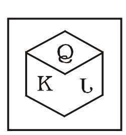
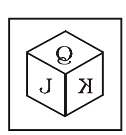
**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**



**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'Z' can be represented by 87, 99, etc; and 'T' can be represented by 69, 95, etc. Similarly, you have to identify the set for the word **'MAZE'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | M | O | G | A | C |
| 1 | A | C | M | O | G |
| 2 | O | G | A | C | M |
| 3 | C | M | O | G | A |
| 4 | G | A | C | M | O |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | J | Z | T | E | U |
| 6 | E | U | J | Z | T |
| 7 | Z | T | E | U | J |
| 8 | U | J | Z | T | E |
| 9 | T | E | U | J | Z |

(1) 00, 41, 99, 96

(2) 12, 04, 56, 58

(3) 24, 22, 88, 65

(4) 43, 10, 69, 77

## GENERAL AWARENESS

**26.** What does indifference curve represent?
(1) Levels of Income and Capital
(2) Satisfaction derived from two goods
(3) Income from two b sinesses
(4) Relationship between expenditure and savings

**27.** Math the following.

| | **Revolution** | | **Leader** |
|---|---|---|---|
| 1. | Green Revolution | a. | Durgesh Patel |
| 2. | White Revolution | b. | M.S. Swaminatha |
| 3. | Pink Revolution | c. | Verghese Kurien |

(1) 1-c, 2-b , 3-a
(2) 1-b, 2-c, 3-a
(3) 1-a, 2-b, 3-c
(4) 1-a, 2-c, 3-b

**28.** India has taken the concept of 'Judicial Review' from which country's constitution?
(1) United States
(2) United Kingdom
(3) Canada
(4) Ireland

**29.** How many times a person can be elected as the President of India?
(1) One time
(2) Two times
(3) Three times
(4) No bar

**30.** Who shot dead John Saunders on 17th December, 1927?
(1) Bhagat Singh
(2) Mangal Panday
(3) Sukhdev
(4) Bipin Chandra Pal Singh

**31.** Sardar Vallabhbai Patel was the leader of ______.
(1) Bhoodan Movement
(2) Rowlatt Satyagraha
(3) Bardoli Satyagraha
(4) Swadeshi Movement

**32.** Which type of forests majorly comprises of lichens and mosses?
(1) Taiga forests
(2) Tundra forests
(3) Temperate mixed forests
(4) Tropical ever green forests

**33.** Which of the following has maximum diurnal temperature difference?
(1) Desert (2) Mountains
(3) Plateau (4) Ocean

**34.** Night Blindness is caused by deficiency of which of the following Vitamin?
(1) Vitamin B (2) Vitamin C
(3) Vitamin K (4) Vitamin A

**35.** The right portion of human heart receives ______ blood.
(1) pure
(2) impure
(3) mixed
(4) None of these

**36.** Which of the following is the largest gland in human body?
(1) Thyroid (2) Liver
(3) Kidney (4) Pancreas

**37.** On which principle does the hydraulic lift works?
(1) Newton's law
(2) Pascal's law
(3) Archimedes's law
(4) Joule's law

**38.** At what temperature (in degree celsius), the numerical values on Celsius and Fahrenheit scales become equal?
(1) –40 (2) 40
(3) 273 (4) –273

**39.** In MICR, what does 'I' stands for?
(1) Interactive
(2) Information
(3) Ink
(4) Instruction

**40.** What is the process of conversion of solid state directly to gaseous state called?
(1) Evaporation
(2) Condensation
(3) Sublimation
(4) Distillation

**41.** What are the main components of Bronze Alloy?
(1) Copper and Zinc
(2) Copper and Tin
(3) Zinc and Nickel
(4) Aluminium and Nickel

**42.** Which of the following causes fly ash?
(1) Hydroe lectric Power Station
(2) Coal Combustion Power Plant
(3) Nuclear Power Plant
(4) Tidal Power Plant

**43.** "Dulari Kanya", a scheme to bring down infant mortality in the state is launched by which Indian State?
(1) Arunachal Pradesh
(2) Rajasthan
(3) Uttar Pradesh
(4) Madhya Pradesh

**44.** Who developed the theory of relativity?
(1) Issac Newton
(2) Charles Darwin
(3) Marie Curie
(4) Albert Einstein

**45.** 'Queensbury rules' is code of rules that directly influences which of the following sport?
(1) Tennis (2) Boxing
(3) Polo (4) Billiards

**46.** Who amidst the following is a distinguished painter?
(1) Uday Shankar
(2) Sonal Mansingh
(3) Amrita Shergill
(4) Yamini Kirshnamurthy

**47.** Who among the following was awarded with Padma Shri 2017 in the field of 'Sports - Hockey'?
(1) Sardar Singh
(2) P. R. Shreejesh
(3) Ramandeep Singh
(4) Yuvraj Walmiki

**48.** "Hema Malini : Beyond the Dream Girl" is authored by which author?
(1) MeenaIyer
(2) Hema Malini
(3) Ram Kamal Mukherjee
(4) Vijay Kumar

**49.** A 7500 mile direct rail link was launched on 10 April, 2017 between China and _____.
(1) Pakistan
(2) Kazakhstan
(3) Great Britain
(4) France

**50.** 19th SAARC Summit was planned to be held in November 2016 but it got postponed. Which country was its host?
(1) Nepal (2) Bhutan
(3) India (4) Pakistan

## QUANTITATIVE APTITUDE

**51.** The product of three consecutive odd numbers is 1287. What is the largest of the three numbers?
(1) 9 (2) 11
(3) 13 (4) 17

**52.** 45 men or 60 boys can do a piece of work in 20 days. How many days will 15 men and 20 boys take to complete the work?
(1) 23 (2) 45
(3) 30 (4) 25

**53.** How many spherical balls of radius 1 cm can be made by melting a hemisphere of radius 6 cm?
(1) 112 (2) 108
(3) 116 (4) 104

**54.** The marked price of a shirt is Rs. 1280. If the shirt is being sold for Rs. 900, then what is the discount per cent?
(1) 31.31 (2) 25.57
(3) 29.68 (4) 34.36

**55.** The ratio of number of cans of orange, pineapple and mixed fruit juices kept in a store is 8 : 9 : 15. If the store sells 25%, 33.33% and 20% of orange, pineapple and mixed fruit juices cans respectively, then what is the ratio of number of cans of these juices in the remaining stock?
(1) 1 : 1 : 2
(2) 6 : 6 : 13
(3) 12 : 15 : 19
(4) 4 : 9 : 13

**56.** The ratio of number of boys and girls in a class is 2 : 3. The average weight of boys and girls in the class is 18 kg and 21 kg respectively. What is the average weight (in kgs) of all the boys and girls together?
(1) $\frac{99}{5}$ (2) $\frac{101}{5}$
(3) $\frac{109}{6}$ (4) $\frac{96}{5}$

**57.** A milk merchant buys 50 litres of milk at the rate of Rs. 40 per litre and mixes 5 litres of water in it. If he sells this mixture at the rate of Rs. 42 per litre, then what is the profit per cent for the dealer?
(1) 17.2 (2) 14.4
(3) 16.6 (4) 15.5

**58.** If A is 6 times more than B, then by what per cent is B less than A?
(1) 64.82 (2) 83.33
(3) 28.56 (4) 85.71

**59.** A runner starts running from a point at 6 : 00 a.m. with a speed of 8 km/hr. Another racer starts from the same point at 8 : 30 a.m. in the same direction with a speed of 10 km/hr. At what time of the day (in p.m.) will the second racer will overtake the other runner?
(1) 8 : 00 (2) 4 : 00
(3) 6 : 30 (4) 5 : 30

**60.** A sum amounts to Rs. 7727.104 at the rate of 12% per annum compounded annually after three years. What is the value of principal (in Rs.)?
(1) 5000 (2) 5200
(3) 5350 (4) 5500

**61.** When $\left[x+\left(\frac{1}{x}\right)\right]=5$, then what is the value of $\left[x-\left(\frac{1}{x}\right)\right]$?
(1) 11 (2) $\pm\sqrt{22}$
(3) 21 (4) $\pm\sqrt{21}$

**62.** If $x=\frac{(\sqrt{2}+1)}{(\sqrt{2}-1)}$, then what is the value of $\frac{(x^5+x^4+x^2+x)}{x^3}$?
(1) 40 (2) 37 .5
(3) 38 (4) $20\sqrt{2}$

**63.** If $x = 5 - 2\sqrt{6}$, then what is the value of $\sqrt{x}+\left(\frac{1}{\sqrt{x}}\right)$?
(1) 5 (2) 2
(3) $2\sqrt{3}$ (4) $2\sqrt{2}$

**64.** If $27^x+27^{\left[x-\left(\frac{1}{3}\right)\right]}=972$, then what is the value of $x$?
(1) 2 (2) 3
(3) 4 (4) 5

**65.** The inradius of an equilateral triangle is 10 cm. What is the circum-radius (in cm) of the same triangle?
(1) 5 (2) $10\sqrt{3}$
(3) 20 (4) $20\sqrt{3}$

**66.** The point of intersection of all the angle bisectors of a triangle is _____ of the triangle.
(1) Incentre
(2) Circumcentre
(3) Centroid
(4) Orthocentre

**67.** ABC is an equilateral triangle and P is the orthocentre of the triangle, then what is the value (in degrees) of $\angle BPC$?
(1) 90 (2) 120
(3) 135 (4) 145

**68.** In a triangle ABC, AD is angle bisector of $\angle A$ and AB : AC = 3 : 4. If the area of triangle ABC is 350 $cm^2$, then what is the area (in $cm^2$) of triangle ABD?
(1) 150 (2) 200
(3) 210 (4) 240

**69.** A boat is sailing towards a lighthouse of height $20\sqrt{3}$ metre at a certain speed. The angle of elevation of the top of the lighthouse changes from 30° to 60° in 10 seconds. What is the time taken (in seconds) by the boat to reach the lighthouse from its initial position?
(1) 10 (2) 15
(3) 20 (4) 60

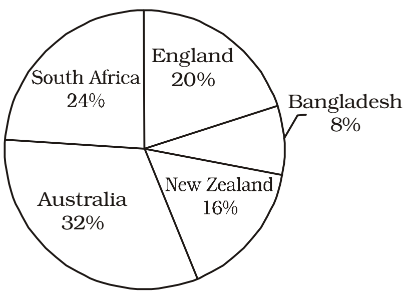
**70.** What is the value of $\left[\frac{\sec\theta}{(\sec\theta-1)}\right]+\left[\frac{\sec\theta}{(\sec\theta+1)}\right]$?
(1) $2\sin^2\theta$
(2) $2(1+\tan^2\theta)$
(3) $2\operatorname{cosec}^2\theta$
(4) $\sin^2\theta$

**71.** If cosec $\theta = \frac{1}{4x} + x$, then what is the vlaue of (cosecθ + cotθ)?

(1) $3x$ (2) $x$

(3) $4x$ (4) $2x$ or $\frac{1}{2x}$

**Directions (72–75) :** The pie chart given below shows the runs scored by Pujara against teams of different countries.




**72.** The runs scored by Pujara against South Africa is more than runs scored against Bangladesh by what per cent?

(1) 100 (2) 150

(3) 200 (4) 250

**73.** If Pujara has scored 1875 runs in total, then what is the difference between runs scored by Pujara against South Africa and New Zealand?

(1) 150 (2) 175

(3) 200 (4) 250

**74.** What is the sectorial angle (in degrees) made by the runs scored against Australia in the given pie chart?

(1) 106.8 (2) 109.6

(3) 112.4 (4) 115.2

**75.** What should be the least number of runs that Pujara must have scored in total (runs can only be integers)?

(1) 25 (2) 225

(3) 375 (4) 625

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** I am vexed at him (1)/ for what all he has (2)/ done for him till date. (3)/ No Error (4)

**77.** The Manager warned his team members (1)/ that if they persist in their (2)/ obstructionist attitude they would be punished. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Both taciturn and _____, Daniel seldom spoke and never spent money.

(1) wary (2) cheap

(3) discreet (4) miserly

**79.** He was too _____ to make a statement before the Boss.

(1) shy (2) tired

(3) timid (4) coward

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Reiterate**

(1) Abuse (2) Pretend

(3) Detest (4) Repeat

**81. Nincompoop**

(1) Wise (2) Fool

(3) Lover (4) Companion

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Pellucid**

(1) Torpid (2) Explicit

(3) Murky (4) Limpid

**83. Adamant**

(1) Rigid (2) Flexible

(3) Fixed (4) Unshakable

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To wrangle over an ass's shadow**

(1) To waste money over trifles

(2) To punish a person severely for his arrogance

(3) To quarrel over trifles

(4) To keep away from extreme poverty

**85. Make one's flesh creep**

(1) To confuse someone

(2) To flatter someone

(3) To abuse someone

(4) To frighten someone

**Directions (86–87) :** Improve the bracketed part of each sentence.

**86.** Father **(would have been appreciated)** your efforts if you had informed him.

(1) would be appreciated

(2) would have appreciated

(3) should have been appreciated

(4) No improvement

**87.** Neha was **(surprised by)** her result.

(1) surprised to

(2) surprised from

(3) surprised at

(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88 Study of tumors**

(1) Oenology

(2) Oncology

(3) Phrenology

(4) Upology

**89. The highest point**

(1) Tempest (2) Outpost

(3) Archive (4) Zenith

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Literary (2) Leakeage

(3) Laudable (4) Loafer

**91.** (1) Anasthetic

(2) Obliterate

(3) Concurrence

(4) Blithesome

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. Yet making loans to poor people is hardly a poverty cure.
Q. Segmenting the industry, might be worth while if it allows more of the poor to get access to credit.
R. Multinational corporations could take the top microfinance institutions to the next level, and the remainder could take the responsibility of development groups and regional banks.
S. Property rights and the role of law matter too.
(1) PRQS (2) QRPS
(3) SPQR (4) RSPQ

**93.** P. But the scenario has quite changed now-a-days by allocating a special budget of funds for security.
Q. In the last ten years, budget towards the development of military forces is higher when compared to others.
R. India in earlier days gave more importance to the development of industry and less importance to other departments.
S. This is because of the frightening increase in terrorism all around the world especially emerging after the 9/11 terror attack in U.S.
(1) PRQS (2) SPQR
(3) QSPR (4) RPSQ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**One should keep one's word.**
(1) A word should be kept.
(2) A word should be keeping.
(3) One's word has to be kept.
(4) One's word should be kept by us.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**The old man said, "Thanks I shall never forget this kindness, Ankit."**
(1) The old man applauded Ankit for his kindness and he shall never forget Ankit.
(2) The old man thanked Ankit and assured him that he would never forget his kindness.
(3) Ankit was being thanked by the old man for his kindness towards an old man.
(4) The old man said thank you to Ankit for his kindness.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

National integration means **(96)** all the people of the nation into a single whole. It is a **(97)** that bends together all people in one **(98)** bond no matter what their religion, caste, language or history may be. It is a **(99)** cementing force whereby all kinds of people live **(100)** peacefully and can identify themselves as a part and parcel of a nation.

**96.** (1) segregating
(2) combining
(3) residing
(4) complying

**97.** (1) sentiment
(2) resources
(3) essentials
(4) finances

**98.** (1) real
(2) common
(3) nominal
(4) similar

**99.** (1) weakening
(2) natural
(3) strong
(4) settled

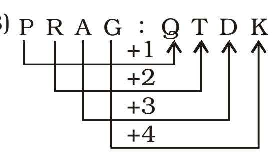
**100.** (1) separately
(2) jointly
(3) happily
(4) together

## ANSWERS

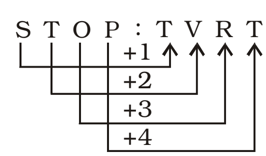
| | | | |
|---|---|---|---|
| **1.** (3) | **2.** (3) | **3.** (3) | **4.** (1) |
| **5.** (3) | **6.** (2) | **7.** (1) | **8.** (1) |
| **9.** (4) | **10.** (3) | **11.** (3) | **12.** (2) |
| **13.** (4) | **14.** (3) | **15.** (1) | **16.** (4) |
| **17.** (1) | **18.** (3) | **19.** (2) | **20.** (3) |
| **21.** (2) | **22.** (2) | **23.** (4) | **24.** (2) |
| **25.** (1) | **26.** (2) | **27.** (2) | **28.** (1) |
| **29.** (4) | **30.** (1) | **31.** (3) | **32.** (2) |
| **33.** (1) | **34.** (4) | **35.** (2) | **36.** (2) |
| **37.** (2) | **38.** (1) | **39.** (3) | **40.** (3) |
| **41.** (2) | **42.** (2) | **43.** (1) | **44.** (4) |
| **45.** (2) | **46.** (3) | **47.** (2) | **48.** (2) |
| **49.** (3) | **50.** (4) | **51.** (3) | **52.** (3) |
| **53.** (2) | **54.** (3) | **55.** (1) | **56.** (1) |
| **57.** (4) | **58.** (4) | **59.** (3) | **60.** (4) |
| **61.** (4) | **62.** (1) | **63.** (3) | **64.** (1) |
| **65.** (3) | **66.** (1) | **67.** (2) | **68.** (1) |
| **69.** (2) | **70.** (3) | **71.** (4) | **72.** (3) |
| **73.** (1) | **74.** (4) | **75.** (1) | **76.** (1) |
| **77.** (2) | **78.** (4) | **79.** (3) | **80.** (4) |
| **81.** (2) | **82.** (3) | **83.** (2) | **84.** (3) |
| **85.** (4) | **86.** (2) | **87.** (3) | **88.** (2) |
| **89.** (4) | **90.** (2) | **91.** (1) | **92.** (2) |
| **93.** (4) | **94.** (1) | **95.** (2) | **96.** (2) |
| **97.** (1) | **98.** (2) | **99.** (3) | **100.** (4) |

## EXPLANATIONS

**1.** (3) Baby of sheep is known as Lamb. Similarly, baby of cow is known as calf.

**2.** (3)



Similarly,




**3.** (3) $(5 \times 6 \times 2) \div 2 = 30$
Similarly,
$(6 \times 6 \times 3) \div 2 = 54$

**4.** (1) Except Cricket, all others are indoor games. Again, more than two players are included in a team in the game of cricket.

**5.** (3) I $\xrightarrow{+4}$ M $\xrightarrow{+11}$ X

D $\xrightarrow{+4}$ H $\xrightarrow{+11}$ S

K $\xrightarrow{+4}$ O $\xrightarrow{+11}$ Z

But,

G $\xrightarrow{+16}$ W $\xrightarrow{-12}$ K

**6.** (2) $(11)^2 + 1 = 122$, $(11)^3 = 1331$

$(13)^2 + 4 = 173$, $(13)^3 = 2197$

$(14)^2 + 1 = 197$, $(14)^3 = 2744$

$(17)^2 + 1 = 290$, $(17)^3 = 4913$

**7.** (1) Arrangement of words as per dictionary :

3. Xanthic
↓
4. Xenians
↓
1. Xenons
↓
2. Xylyls
↓
5. Xyst

**8.** (1)

L $\xrightarrow{+7}$ S $\xrightarrow{+7}$ Z $\xrightarrow{+7}$ G

O $\xrightarrow{+7}$ V $\xrightarrow{+7}$ C $\xrightarrow{+7}$ J

Q $\xrightarrow{+7}$ X $\xrightarrow{+7}$ E $\xrightarrow{+7}$ L

**9.** (4)

13 → 27 → 56 → 115 → 234

× 2 + 1, × 2 + 2, × 2 + 3, × 2 + 4

**10.** (3) According to Sumitra, her mother's birthday is on 14th or 15th February.

According to Sumitra's brother, their mother's birthday is on 15th or 16th February.

Common date ⇒ 15th February.

**11.** (3) Moto has the highest sugar content.

Energy > Lion

Red > Bull

Now,

Moto > Red > Bull > Energy > Lion

It is clear that Red has the second most sugar content.

**12.** (2) There is only one 'N' in the given word. Therefore, the word TANING cannot be formed.

C A L C U L [A] T [I N G]
⇒ GAIN

C A L C U [L A T I] N G
⇒ TAIL

C A L [C U L] A [T] I N G
⇒ CULT

**13.** (4)

W I L D H O R N
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
23 + 9 + 12 + 4 + 8 + 15 + 18 + 14
= 103 and 103 × 11 = 1133

R A P T U R E
18 + 1 + 16 + 20 + 21 + 18 + 5
= 99 and 99 × 11 = 1089

Therefore,

P O R T L O U I S
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
16 + 15 + 18 + 20 + 12 + 15 + 21 + 9 + 19
= 145 and 145 × 11 = 1595

**14.** (3)

| A ⇒ – | B ⇒ + |
|---|---|
| C ⇒ ÷ | D ⇒ × |

13 C 13 A 13 B 13 D 13 = ?

⇒ ? = 13 ÷ 13 – 13 + 13 × 13

⇒ ? = 1 – 13 + 169 = 157

**15.** (1) 9 * 2 * 5 = 23

⇒ 529 ⇒ $\sqrt{529}$ = 23

1 * 4 * 8 = 29

⇒ 841 ⇒ $\sqrt{841}$ = 29

Therefore,

1 * 6 * 3 = ?

⇒ 361 ⇒ $\sqrt{361}$ = 19

**16.** (4) First Figure :

$9^2 + 6^2 = 81 + 36 = 117$

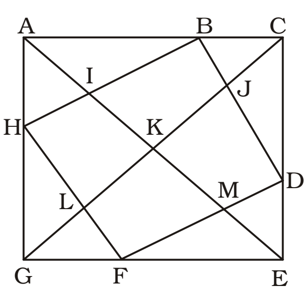
Second Figure :

$8^2 + 2^2 = 64 + 4 = 68$

Third Figure :

$7^2 + 3^2 = 49 + 9 = 58$

**17.** (1)




The triangles are :

ΔAHI; ΔBIA; ΔBAH; ΔCBJ; ΔCJD; ΔDCB; ΔDEM; ΔDEF; ΔAEF; ΔLGF; ΔHGL; ΔHGF; ΔKCA; ΔKEC; ΔKGE; ΔKAG; ΔAGE; ΔACE; ΔECG; ΔCAG

Thus, there are 20 triangles in the given figure.

**18.** (3) First Premise is Universal Affirmative (A–type).

Second Premise is Particular Negative (O–type).

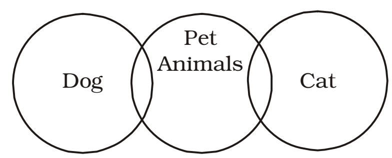
All LEDs are bulbs.
↕
Some bulbs are not tubelights.

A + O ⇒ No Conclusion

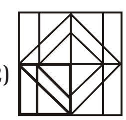
**19.** (2) The symbols γ, β, η and θ are on the faces adjacent to α.

Therefore 'δ' lies opposite 'α'.

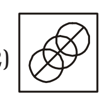
**20.** (3) Dog is different from cat. Some dogs and cats may be pet animals.



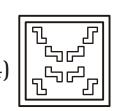

**21.** (2)



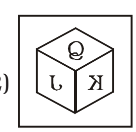
**22.** (2)



**23.** (4)



**24.** (2)



**25.** (1) M = 00, 12, 24, 31, 43

A = 03, 10, 22, 34, 41

Z = 56, 68, 75, 87, 99

E = 58, 65, 77, 89, 96

| Option | M | A | Z | E |
|---|---|---|---|---|
| (1) | 00 | 41 | 99 | 96 |
| (2) | 12 | 04 | 56 | 58 |
| (3) | 24 | 22 | 88 | 65 |
| (4) | 43 | 10 | 69 | 77 |

**26.** (2) An indifference curve is a graph showing combination of two goods that give the consumer equal satisfaction and utility. Each point on an indifference curve indicates that a consumer is indifferent between the two and all points give him the same utility.

**27.** (2) **Revolution–Leader**
- Green Revolution – M.S. Swaminathan
- White Revolution – Verghese Kurien
- Pink Revolution – Durgesh Patel

**28.** (1) The Indian Constitution adopted the Judicial Review on lines of U.S. Constitution. The Supreme Court enjoys a position which entrusts it with the power of reviewing the legislative enactments both of Parliament and the State Legislatures. This grants the court a powerful instrument of judicial review under the constitution.

**29.** (4) The President is elected by the members of an electoral college consisting of the elected members of both the Houses of Parliament and the elected members of the Legislative Assemblies of States and the Union Territories of Delhi and Pondicherry. According to Article 57 of the Constitution, a President is eligible for re-election to that office and there is no bar on number of times.

**30.** (1) On December 17, 1927, the revolutionaries Bhagat Singh and Rajguru shot and killed assistant superintendent of police John Saunders. However, their original target was not Saunders but superintendent of police James Scott who had ordered his men to lathi-charge protesters leading to the death of the nationalist leader Lala Lajpat Rai.

**31.** (3) The Bardoli Satyagraha, 1928 was a movement in the independence struggle led by Sardar Vallabhai Patel for the farmers of Bardoli against the unjust raising of taxes. A large number of women took active part in the movement. It was these women who gave Patel the moniker 'Sardar'.

**32.** (2) One of the most successful types of tundra vegetation is moss. Mosses are quite tough despite their small size. Over 100 species of moss grow in the tundra. Lichens are abundant in the tundra regions. Lichens are actually two organisms bound together in an interdependent union. Lichens consist of a fungus and either a green alga or a blue-green bacterium.

**33.** (1) Diurnal temperature variations are greatest very near the earth's surface. High desert areas typically have the greatest diurnal temperature variations. Low lying, humid areas typically have the least.

**34.** (4) It occurs as a result of various diseases that cause degeneration of the rods of the retina (the sensory cells responsible for vision in dim light). The problem can also appear as an inherited deficiency in visual purple, or rhodopsin, which is the pigment of the rods of the retina. Night blindness is a classic finding from deficiency of vitamin A. Rhodopsin maintains its photosensitivity only in the presence of vitamin A.

**35.** (2) The heart receives blood low in oxygen from the systemic circulation, which enters the right atrium from the superior and inferior venae cavae and passes to the right ventricle. From here it is pumped into the pulmonary circulation, through the lungs where it receives oxygen and gives off carbon dioxide. Oxygenated blood then returns to the left atrium, passes through the left ventricle and is pumped out through the aorta to the systemic circulation? where the oxygen is used and metabolized to carbon dioxide.

**36.** (2) Liver is the largest gland found in the human body. The liver has many functions and plays a large role in human metabolism and digestion. The organ stores glycogen, decomposes red blood cells, synthesizes plasma proteins, produces hormones, and removes toxins and waste products from the blood.

**37.** (2) Pascal's law is a principle in fluid mechanics that states that: pressure exerted anywhere in a confined incompressible fluid is transmitted equally in all directions throughout the fluid such that the pressure ratio (initial difference) remains the same. An important application of Pascal's law is the hydraulic lift used to lift heavy objects.

**38.** (1) The temperature at which Fahrenheit and Celsius thermometer readings are equal is : –40 degrees.

**39.** (3) MICR code is a code printed using MICR (Magnetic Ink Character Recognition technology) on cheques to enable identification the cheques. A MICR code is a 9-digit code that uniquely identifies a bank and a branch participating in an Electronic Clearing System (ECS). The first 3 digit of the code represents the city code, the middle ones represent the bank code and last 3 represents the branch code.

**40.** (3) Sublimation is conversion of a substance from the solid to the gaseous state without

its becoming liquid. An example is the vaporization of frozen carbon dioxide (dry ice) at ordinary atmospheric pressure and temperature. The phenomenon is the result of vapour pressure and temperature relationships.

**41.** (2) Bronze alloy traditionally is composed of copper and tin. Bronze is used in architecture for structural and design elements, for bearings because of its friction properties, and as phosphor bronze in musical instruments, electrical contacts, and ship propellers.

**42.** (2) Fly ash is a byproduct from burning pulverized coal in electric power generating plants. During combustion, mineral impurities in the coal (clay, feldspar, quartz, and shale) fuse in suspension and float out of the combustion chamber with the exhaust gases. As the fused material rises, it cools and solidifies into spherical glassy particles called fly ash. It provides an excellent prime material used in blended cement, mosaic tiles, and hollow blocks among others.

**43.** (1) On the occasion of 68the Republic Day, the state government of Arunachal Pradesh has launched a special scheme named as "Dulari Kanya Yojana" to bring down the infant mortality in the state. The new Infant mortality scheme in Arunachal Pradesh will track all the pregnant mothers to provide them better care for safe and secured delivery.

**44.** (4) Albert Einstein, in his theory of special relativity, determined that the laws of physics are the same for all non-accelerating observers, and he showed that the speed of light within a vacuum is the same no matter the speed at which an observer travels.

**45.** (2) The Marquess of Queensberry Rules are a code of generally accepted rules in the sport of boxing. Drafted in London in 1865 and published in 1867, they were named so as John Douglas, 9th Marquess of Queensberry publicly endorsed the code, although they were written by a Welsh sportsman named John Graham Chambers.

**46.** (3) Amrita Sher-Gil was an eminent Hungarian-Indian painter. She was influenced by the Mughal as well as the Ajanta paintings. Her works have been declared as National Art Treasures by the Government of India.

**47.** (2) Indian senior men's hockey team captain P R Sreejesh was awarded Padma Shri award 2017. He was awarded the best goalkeeper of the tournament when India won the Asia Cup in 2008. Sreejesh became a regular member of the Indian senior men's team from 2011 onwards and since has been instrumental in helping India win several important tournaments.

**48.** (2) The biography, titled Beyond The Dream Girl, is written by Ram Kamal Mukherjee, and was unveiled on Hema Malini's 69th birthday (October 16).

**49.** (3) The first freight train linking China directly to the United Kingdom was launched on 10 April, 2017 becoming the world's second-longest rail route. China already has a regular direct freight train service to Germany, Europe's largest economy.

**50.** (4) The SAARC Summit cancelled after four nations Afghanistan, Bhutan, Bangladesh and India requested to postpone the summit in Islamabad scheduled for November 9 and 10, 2016, following escalation of tension between India and Pakistan. SAARC is a regional body founded in 1985 in South Asia, comprising Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka.

**51.** (3)

| 3 | 1287 |
|---|---|
| 3 | 429 |
| 11 | 143 |
| | 13 |

$\therefore 1287 = 9 \times 11 \times 13$

$\therefore$ Required largest number = 13

**52.** (3) $\because$ 45 men $\equiv$ 60 boys

$\therefore 1 \text{ man} \equiv \frac{60}{45} \text{ boys} = \frac{4}{3} \text{ boys}$

$\therefore$ 15 men and 20 boys

$\equiv \left(15 \times \frac{4}{3} + 20\right)$ boys

= 40 boys

$\because$ 60 boys do the work in 20 days.

$\therefore$ 40 boys will do the work in

$= \frac{20 \times 60}{40} = 30$ days

**53.** (2) Number of balls

$= \frac{\text{Volume of hemisphere}}{\text{Volume of sphere}}$

$= \frac{\frac{2}{3}\pi R^3}{\frac{4}{3}\pi r^3}$

$= \frac{1}{2}\left(\frac{R}{r}\right)^3$

$= \frac{1}{2}\left(\frac{6}{1}\right)^3 = \frac{6 \times 6 \times 6}{2} = 108$

**54.** (3) Marked price of shirt = Rs. 1280

Selling price = Rs. 900.

Discount = Rs. (1280 – 900) = Rs. 380

If discount = $x$% then

$\frac{1280 \times x}{100} = 380$

$\Rightarrow x = \frac{380 \times 100}{1280} = 29.68\%$

**55.** (1) In the remaining store the ratio of number of cans of orange, pineapple and mixed fruit juices = 75% of $8k$ : $\frac{200}{3}$% of $9k$ : 80% of $15k$

$= \frac{8k \times 75}{100} : \frac{9k \times 200}{300} : \frac{15k \times 80}{100}$

= 600 : 600 : 1200

= 1 : 1 : 2

**56.** (1) Total weight of all boys and girls $= \frac{2x \times 18 + 3x \times 21}{5x}$

$= \frac{36+63}{5} = \frac{99}{5}$ kg

**57.** (4) Total cost price of 50 kg. of milk = Rs. (50 × 40) = Rs. 2000
Selling price of 55 kg. of mixture = Rs. (55 × 42) = Rs. 2310
Profit = Rs. (2310 – 2000)
= Rs. 310

Profit per cent $= \frac{310}{2000} \times 100$

= 15.5%

**58.** (4) Let B = 100
∴ A = 700

∴ Required per cent $= \frac{700-100}{700} \times 100$

$= \frac{600}{7}$ = 85.71%

**59.** (3) In $2\frac{1}{2}$ hours, distance covered by first runner

$= \frac{5}{2} \times 8$ = 20 km

Relative speed = (10 – 8) kmph.
= 2 km/hr
Required time to cover 20 km.

$= \frac{20}{2}$ = 10 hours

∴ Required time = 8 : 30 + 10 hours = 6 : 30 p.m.

**60.** (4) $A = P\left(1+\frac{r}{100}\right)^n$

$\Rightarrow 7727.104 = P\left(1+\frac{12}{100}\right)^3$

$\Rightarrow 7727.104 = P\left(\frac{112}{100}\right)^3$

$\Rightarrow P = \frac{7727.104 \times 100 \times 100 \times 100}{112 \times 112 \times 112}$

= Rs. 5500

**61.** (4) $x + \frac{1}{x} = 5$ (Given)

$\therefore \left(x - \frac{1}{x}\right)^2 = \left(x + \frac{1}{x}\right)^2 - 4$

$= 5^2 - 4 = 25 - 4 = 21$

$\therefore x - \frac{1}{x} = \pm\sqrt{21}$

**62.** (1) Expression

$= \frac{x^5 + x^4 + x^2 + x}{x^3}$

$= x^2 + x + \frac{1}{x} + \frac{1}{x^2}$

Now,

$x = \frac{\sqrt{2}+1}{\sqrt{2}-1} = \frac{(\sqrt{2}+1)(\sqrt{2}+1)}{(\sqrt{2}-1)(\sqrt{2}+1)}$

(Rationalising the denominator)

$= \frac{2+1+2\sqrt{2}}{2-1} = 3 + 2\sqrt{2}$

$\therefore \frac{1}{x} = \frac{\sqrt{2}-1}{\sqrt{2}+1} \times \frac{\sqrt{2}-1}{\sqrt{2}+1}$

$= \frac{(\sqrt{2}-1)^2}{2-1} = \frac{2+1-2\sqrt{2}}{1}$

$= 3 - 2\sqrt{2}$

$\therefore x^2 + \frac{1}{x^2} + x + \frac{1}{x}$

$= \left(x+\frac{1}{x}\right)^2 - 2 + \left(x + \frac{1}{x}\right)$

$= \left(3+2\sqrt{2}+3-2\sqrt{2}\right)^2 - 2$

$+ \left(3+2\sqrt{2}+3-2\sqrt{2}\right)$

$= (6)^2 - 2 + 6 = 36 - 2 + 6 = 40$

**63.** (3) $\sqrt{x} + \frac{1}{\sqrt{x}}$

$= \frac{x+1}{\sqrt{x}} = \frac{5-2\sqrt{6}+1}{\sqrt{5-2\sqrt{6}}}$

$= \frac{6-2\sqrt{6}}{\sqrt{3+2-2\sqrt{6}}}$

$= \frac{6-2\sqrt{6}}{\sqrt{(\sqrt{3}-\sqrt{2})^2}} = \frac{6-2\sqrt{6}}{\sqrt{3}-\sqrt{2}}$

$= \frac{2\sqrt{3}(\sqrt{3}-\sqrt{2})}{\sqrt{3}-\sqrt{2}} = 2\sqrt{3}$

OR

$x = 5 - 2\sqrt{6}$

$\therefore \frac{1}{x} = \frac{1}{5-2\sqrt{6}}$

$= \frac{5+2\sqrt{6}}{(5-2\sqrt{6})(5+2\sqrt{6})}$

$= \frac{5+2\sqrt{6}}{25-24} = 5 + 2\sqrt{6}$

$\because \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2 = x + \frac{1}{x} + 2$

$= 5 - 2\sqrt{6} + 5 + 2\sqrt{6} + 2 = 12$

$\therefore \sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{12} = 2\sqrt{3}$

**64.** (1) $27^x + 27^{\left(x-\frac{1}{3}\right)} = 972$

$\Rightarrow 27^x + 27^x . 27^{-\frac{1}{3}} = 972$

$\Rightarrow 27^x + \frac{27^x}{3} = 972$

$\Rightarrow 27^x\left(1+\frac{1}{3}\right) = 972$

$\Rightarrow 27^x = \frac{972 \times 3}{4}$

$\Rightarrow 27^x = 729 = 27^2$

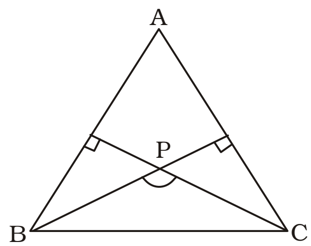
$\Rightarrow$ $x = 2$

**65.** (3) In-radius of equilateral triangle = 10 cm.

$\therefore$ Ex–radius = 10 × 2 = 20 cm.

**66.** (1) The point of intersection of angle bisectors of triangle is called incentre.

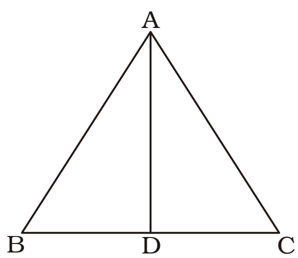
**67.** (2)




$\angle BPC = 180° - \angle A$

$= 180° - 60° = 120°$

**68.** (1)




AB : AC = 3 : 4

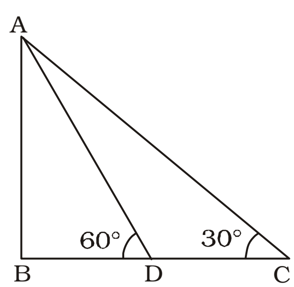
Area of ΔABC = 350 $cm^2$

$\therefore$ Area of ΔABD = $\frac{350 \times 3}{3+4}$

$= \frac{350 \times 3}{7}$

= 150 sq. cm.

**69.** (2)




AB = Light house

C = Initial position of boat

$\angle ACB = 30°$

$\angle ADB = 60°$

In ΔABC,

$\tan 30° = \frac{AB}{BC}$

BC = AB cot30°

$= \sqrt{3}$ AB ...(i)

In ΔABD,

$\tan 60° = \frac{AB}{BD}$

$\Rightarrow$ BD = AB cot 60°

$= \frac{AB}{\sqrt{3}}$ metre

$\therefore$ CD = $\sqrt{3}$ AB $- \frac{AB}{\sqrt{3}}$

$= \frac{3AB - AB}{\sqrt{3}} = \frac{2AB}{\sqrt{3}}$ metre

The boat covers distance CD in 10 seconds.

So, boat covers distance – BC in

$\frac{10 \times \sqrt{3}}{2AB} \times \sqrt{3}$ AB seconds

$= \frac{10 \times 3}{2}$ = 15 seconds

**70.** (3) $\frac{\sec\theta}{\sec\theta - 1} + \frac{\sec\theta}{\sec\theta + 1}$

$= \frac{\sec\theta(\sec\theta+1) + \sec\theta(\sec\theta - 1)}{(\sec\theta - 1)(\sec\theta+1)}$

$= \frac{\sec^2\theta + \sec\theta + + \sec^2\theta - \sec\theta}{\sec^2\theta - 1}$

$= \frac{2\sec^2\theta}{\tan^2\theta}$

$= \frac{\frac{2}{\cos^2\theta}}{\frac{\sin^2\theta}{\cos^2\theta}} = \frac{2}{\sin^2\theta} = 2\,\text{cosec}^2\theta$

**71.** (4) $\text{cosec}\theta = \frac{1}{4x} + x = \frac{1+4x^2}{4x}$

$\cot\theta = \sqrt{\text{cosec}^2\theta - 1}$

$= \sqrt{\left(\frac{1+4x^2}{4x}\right)^2 - 1}$

$= \frac{\sqrt{(1+4x^2)^2 - (4x)^2}}{4x}$

$= \pm \frac{(1-4x^2)}{4x}$

When $\cot\theta = \frac{1-4x^2}{4x}$ cosecθ + cotθ

$= \frac{1+4x^2+1-4x^2}{4x} = \frac{1}{2x}$

When $\cot\theta = -\frac{1-4x^2}{4x}$ cosecθ + cotθ

$= \frac{1+4x^2-1+4x^2}{4x} = \frac{8x^2}{4x}$

$= 2x$

**72.** (3) Runs scored by Pujara against South Africa = 24%

Runs scored by Pujara against Bangladesh = 8%

Required per cent

$= \frac{24-8}{8} \times 100$

$= \frac{16}{8} \times 100 = 200\%$

**73.** (1) Required difference = 24% of 1875 – 16% of 1875

= 450 – 300 = 150

**74.** (4) Sectorial angle made by runs scored against Australia

$= \frac{32}{100} \times 360 = 115.2°$

**75.** (1) The least number of runs that Pujara must have scored in total = 25 only then the runs scored against each country will be a whole number.

**76.** (1) **Vexed (Adjective)** = annoyed or upset.

I am very vexed with you.

Retyping the name Mohan got frustrated and was quite vexed at the computer.

Hence, vexed with him..... should be used here.

Correct expression – vexed with him.

**77.** (2) There is a rule – Past tense is followed by Past tense.
The entire sentence is in Simple Past tense. So, use 'persisted' in place of persist.

**78.** (4) **Miserly (Adjective)** = close fisted; tight–fisted.
**Look at the sentence :**
Daniel never spent money – this shows that he was miserly.

**79.** (3) too + adjective + to + $V_1$
Here, coward is a noun.
Its adjective is cowardly.
**Timid (Adjective)** = showing a lack of confidence/courage.

**80.** (4) **Reiterate/repeat (Verb)** = say again; retell.
**Look at the sentence :**
She reiterated her grievances.
**Abuse (Verb)** = mistreat; maltreat.
**Detest (Verb)** = hate; abhor.
**Pretend (Verb)** = feign; sham.

**81.** (2) **Nincompoop/fool (Noun)** = idiot; a dull–headed person.
**Look at the sentence :**
He is a complete nincompoop (foolish person).
**Wise (Adjective)** = intelligent; learned.
**Lover (Noun)** = boyfriend; girlfriend.
**Companion (Noun)** = mate; friend

**82.** (3) **Limpid/explicit/pellucid (Adjective)** = clear; bright; lucid.
**Look at the sentence :**
Mountains reflected in the pellucid water.
**Murky (Adjective)** = dark; gloomy.
**Look at the sentence :**
The sky was murky.
**Torpid (Adjective)** = lethargic; sluggish; inert.

**83.** (2) **Rigid/fixed/unshakable/ adamant (Adjective)** = inflexible.
**Look at the sentence :**
He is adamant that he is not going so to resign.
**Flexible (Adjective)** = pliable; rupple flexible subber seals.

**84.** (3) **to quarrel over trifles**
**Look at the sentence :**
It is no use wrangling over an ass's shadow.
**Wrangle (Verb)** = argue; quarrel; row.

**85.** (4) **to frighten someone**
make one's flesh creep – make one's skin crawl
**Look at the sentence :**
Cockroaches make my flesh creep.

**86.** (2) **would have appreciated**
It is past conditional.
It is formed as follows :
If clause + sub + had + $V_3$....
subject + would have + $V_3$...
As subject is active, Active voice should be used here.

**87.** (3) **Surprised at**
**Surprised at something** = filled with wonder or astonishment.
**Look at the sentence :**
The lady was genuinely surprised at what happened to her pet.

**88.** (2) **Oenology (Noun)** = sludy of wines.
**Phrenology (Noun)** = study of the shape and size of the cranium.
**Upology** ⇒ related to growth.

**89.** (4) **Tempest (Noun)** = tornado; storm.
**Outpost (Noun)** = a small military camp or position.
**Archive (Noun)** = annals; chronicles; records.

**90.** (2) Correct spelling – leakage

**91.** (1) Correct spelling – anaesthetic

**94.** (1) **A word should be kept**
It is active voice containing a modal verb (should).
Its passive voice is formed as follows :
Subject + modal verb + be + $V_3$ + Obj. .....
In such a sentence, one ... one's is deleted.

**95.** (2) The old man thanked Ankit and assured him that he would never forget his kindeness.
It is direct speech of an assertive sentence.
Its indirect speech is formed as follows :
⇒ connector 'that' is used
⇒ In place of shall, would will be used. Sometimes 'should' is also used depending upon the context.
⇒ Pronouns change as per $\frac{\text{SON}}{123}$
⇒ 'said to' changes to thanked or told (depending upon the context).

**96.** (2) **Segregating** = separating
**Complying** = abiding by
**Combining** = uniting or joining
**Residing** = living; staying

**97.** (1) **Sentiment (Noun)** = emotional feeling.
**Finances/resources (Noun)** = wealth; capital; funds.
**Essentials (Noun)** = necessities; prerequisites.

**98.** (2) **Common (Adjective)** = usual; ordinary.
**Real (Adjective)** = true; genuine.
**Nominal (Adjective)** = official; formal; symbolic.
**Similar (Adjective)** = alike; (much) the same; homogeneous.

**99.** (3) **Strong (Adjective)** = solid; powerful; sturdy.
**Weakening (Adjective)** = debilitating; diminishing.
**Settled (Adjective)** = resolved; put right.
**Natural (Adjective)** = organic; pure; unrefined

**100.** (4) **Live together** = stay together.
**Look at the sentence :**
In India, people of all castes, colours and creeds live together in harmony.

❑❑❑

**SET 21**

# SOLVED PAPER
# SSC CGL TIER-I (CBE) EXAM

**Held on : 16.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Banana : Fruit : : Ginger : ?
(1) Root (2) Fruit
(3) Flower (4) Stem

**2.** In the following question, select the related letters from the given alternatives :
JPSW : LQUX : : MRFT : ?
(1) OTVG (2) OGTU
(3) OSHU (4) OPQR

**3.** In the following question, select the related number from the given alternatives :
65 : 82 : : 145 : ?
(1) 165 (2) 168
(3) 169 (4) 170

**4.** In the following question, select the odd word from the given alternatives :
(1) Trees (2) Leaves
(3) Flower (4) Stem

**5.** In the following question, select the odd letters from the given alternatives :
(1) CEF (2) LNO
(3) RTU (4) GIK

**6.** In the following question, select the odd number pair from the given alternatives :
(1) 49 – 64 (2) 576 – 729
(3) 441 – 484 (4) 100 – 121

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Waste 2. Wrong
3. Witty 4. Worcester
5. Warlike
(1) 51324 (2) 13452
(3) 51342 (4) 15342

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
A, C, F, H, K, ?
(1) M (2) N
(3) L (4) O

**9.** In the following question, select the missing number from the given alternatives :
1, 3, 6, 10, 15, ?
(1) 20 (2) 21
(3) 22 (4) 24

**10.** In a row of people Manu is 7th from bottom end of row. Shrey is 10 ranks above Manu. If Shrey is 8th from top end, then how many people are there in this row?
(1) 25 (2) 26
(3) 24 (4) 23

**11.** Seven years ago, the age of Sahil was equal to the present age of Nihal. Sum of Sahil's age 5 years ago and Nihal's age 6 years later is 58 years. If Ruchi is 4 years elder to Sahil, then what will be Ruchi's age (in years) after 10 years?
(1) 38 (2) 46
(3) 42 (4) 36

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
**REPRESENTATION**
(1) PAINT (2) SENATOR
(3) TREES (4) STRICT

**13.** In a certain code language, "TROUPE" is written as "GILFKV" and "ERUPTION" is written as "VIFKGRLM". How is "GENIUS" written in that code language?
(1) TVMRFH (2) TVMRGH
(3) VIKRGH (4) TUVHRH

**14.** If "α" denotes "subtracted from", "β" denotes "multiplied by", "θ" denotes "added to" and "δ" denotes "divided by", then
10 θ 8 β 4 δ 8 α 9 = ?
(1) 7 (2) 5
(3) 9 (4) 11

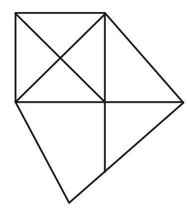
**15.** If $9^2$ A $4^2$ B $3^2$ = 56 and $7^2$ A $2^2$ B $1^2$ = 44, then
$11^2$ A $5^2$ B $7^2$ = ?
(1) 29 (2) 32
(3) 47 (4) 24

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

| 1 | 7 | 6 | 56 |
|---|---|---|---|
| 1 | 4 | 8 | 45 |
| 2 | 3 | 6 | ? |

(1) 32 (2) 35
(3) 46 (4) 47

**17.** How may quadrilaterals are there in the given figure ?



(1) 3 (2) 4
(3) 7 (4) 6

**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.

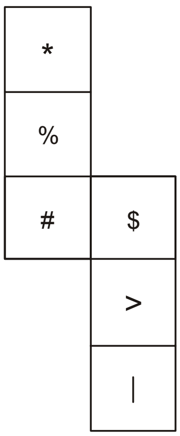
**Statements :**
I. Some girls are clever.
II. All clever are hardworking.

**Conclusions :**
I. Some girls are not hardworking.
II. Some girls are hardworking.
III. Some hardworking are not girls.

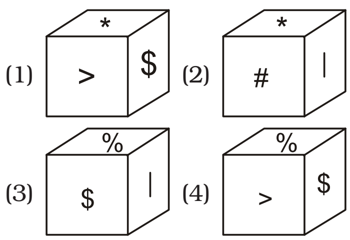
(1) Only Conclusions I and II follow.
(2) Only Conclusion II follows.
(3) Only Conclusions I and III follow
(4) All Conclusions follow

**19.** From the given options, which answer figure can be formed by folding the figure given in the question?

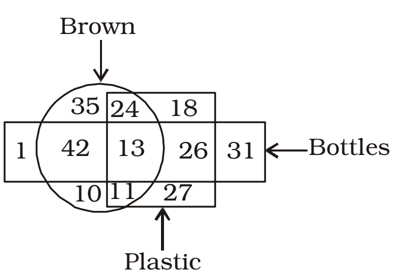
**Question Figure :**



**Answer Figures :**



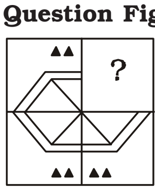
**20.** In the given figure, how many bottles are not brown ?



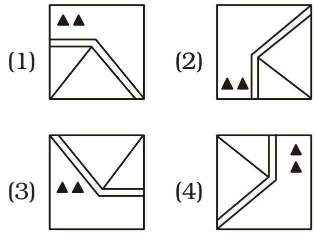

(1) 58 (2) 62
(3) 102 (4) 106

**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

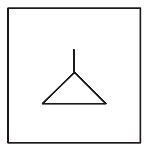


**Answer Figures :**

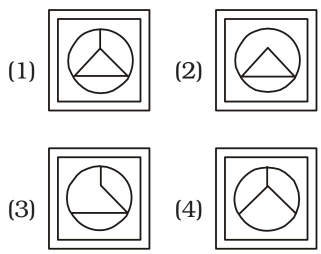


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

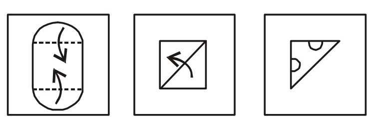


**Answer Figures :**

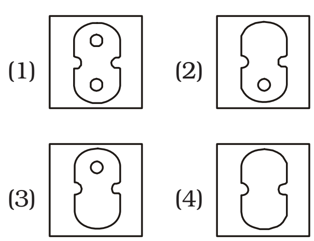


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

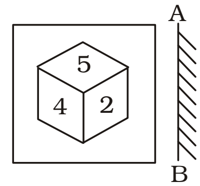


**Answer Figures :**

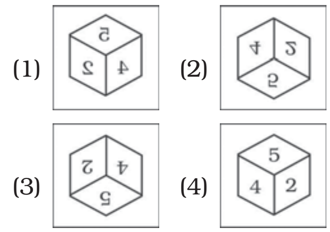


**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'E' can be represented by 21, 44 etc. and 'T' can be represeted by 65, 87 etc. Similarly, you have to identify the set for the word **'FATE'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | A | U | O | E | I |
| 1 | E | I | A | U | O |
| 2 | O | E | I | A | U |
| 3 | U | O | E | I | A |
| 4 | I | A | U | O | E |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | B | F | K | N | T |
| 6 | T | B | F | K | N |
| 7 | N | T | B | F | K |
| 8 | K | N | T | B | F |
| 9 | F | K | N | T | B |

(1) 56, 00, 87, 11
(2) 96, 41, 59, 44
(3) 88, 12, 76, 33
(4) 78, 34, 98, 21

## GENERAL AWARENESS

**26.** After which five year plan, 'The Rolling Plan' was implemented?
(1) Third Plan
(2) Fifth Plan
(3) Seventh Plan
(4) Ninth Plan

**27.** Which tax causes a burden on the poorer section of the society?
(1) Direct Tax
(2) Indirect Tax
(3) Both Direct and Indirect Tax
(4) None of these

**28.** Which article was referred to as the 'the heart and soul' of the constitution by Dr. B. R. Ambedkar?
(1) Article 4 (2) Article 32
(3) Article 28 (4) Article 30

**29.** Which of the following provision needs a special majority in Parliament?
(1) Change in Fundamental Rights
(2) Creation of New States
(3) Abolition of Legislative Councils in State
(4) Rules and Procedures in Parliament

**30.** Which act ended the "Trade Monopoly" of the East India Company?
(1) Regulating Act of 1773
(2) Pitt's India Act of 1784
(3) The Charter Act of 1833
(4) The Charter Act of 1813

**31.** Match the following.

| Battles | Year |
|---|---|
| 1. Battle of Buxar | a. 1576 |
| 2. Battle of Plassey | b. 1764 |
| 3. Battle of Haldighati | c. 1757 |

(1) 1-c, 2-b , 3-a
(2) 1-b, 2-c, 3-a
(3) 1-b, 2-a, 3-c
(4) 1-c, 2-a, 3-b

**32.** Which of the following state receives rainfall due to western disturbances?
(1) Punjab
(2) West Bengal
(3) Kerala
(4) Gujarat

**33.** Why does Western Ghats and Eastern Ghats both receive sufficient rainfall but Deccan Plateau receives scanty rainfall?
(1) It is a rain shadow area
(2) It is located parallel to wind direction
(3) It is away from the coast
(4) Rain bearing clouds are absent

**34.** In which of the following part of the cell does the pyruvic acid is broken down into carbon dioxide, water and energy?
(1) Cytoplasm
(2) Nucleus
(3) Mitochondria
(4) Chloroplast

**35.** What is plant cell wall mainly composed of?
(1) Lipids (2) Vitamin
(3) Cellulose (4) Protein

**36.** What is the SI unit of Power?
(1) Boyle (2) Watt
(3) Newton (4) Pascal

**37.** Which one of the following is not a type of coal?
(1) Anthracite
(2) Lignite
(3) Peat
(4) Siderite

**38.** Which of the following pair is INCORRECT?
I. Parsec - Distance
II. Barrel - Liquid
III. Light year - Time
(1) Only III
(2) Only I and III
(3) Only II
(4) All are correct

**39.** What is the name of the first Super Computer of the world?
(1) CDC 6600
(2) USENET
(3) COMODORVIC/20
(4) PARAM-10000

**40.** Fog, clouds, mist are examples of ______.
(1) Aerosol (2) Solidsol
(3) Foam (4) Gel

**41.** Which of the following is a chemical formula of quicklime?
(1) $Ca_2O$ (2) $Ca_2CO_3$
(3) $CaO_2$ (4) $CaO$

**42.** Who was the pioneer of Chipko movement of 1973?
(1) Sambaji
(2) Baba Amte
(3) Sunderlal Bahuguna
(4) Medha Patkar

**43.** 'Pradhan Mantri Digital Saksharta Abhiyan' is launched to digitally literate 6 crore rural households by
(1) March, 2019
(2) March, 2020
(3) April, 2021
(4) March, 2022

**44.** Edward Jenner discovered vaccine for which of the following disease?
(1) Polio
(2) Tuberculosis
(3) Small Pox
(4) Rabies

**45.** In 2017 Australian Open, Serena Williams defeated her sister Venus Williams to win the ______ Grand Slam Singles title of her career.
(1) 23rd (2) 18th
(3) 26th (4) 20th

**46.** Which Indian state hosted the 3 days long 'International Yoga Fest' held from 8th to 10th March, 2017?
(1) Uttar Pradesh
(2) Madhya Pradesh
(3) Maharashtra
(4) Delhi

**47.** Who was awarded with the Filmfare Lifetime Achievement Award for the year 2017?
(1) Yash Chopra
(2) Kamini Kaushal
(3) Shatrughan Sinha
(4) Moushumi Chatterjee

**48.** Who is the author of 'The Windfall'?
(1) Manmohan Singh
(2) Amitav Ghosh
(3) Diksha Basu
(4) Arundhati Roy

**49.** Which country will host the 9th BRICS Summit in the year 2017?
(1) Brazil (2) Russia
(3) India (4) China

**50.** With which country has India signed an agreement for assistance in green and sustainable construction of infrastructure in the Himalayan Kingdom in December, 2016?
(1) Nepal
(2) Afghanistan
(3) Bhutan
(4) Pakistan

## QUANTITATIVE APTITUDE

**51.** For what value of $x$, the number $211x$ will be a perfect square?
(1) 4 (2) 5
(3) 6 (4) 9

**52.** 2 men or 3 women can complete a job in 96 days. Then 6 men and 7 women will complete the same job in how many days?
(1) 18 (2) 27
(3) 20 (4) 24

**53.** If the radius of the cylinder is decreased by 20%, then by how much percent the height must be increased, so that the volume of the cylinder remains same?
(1) 20 (2) 36.25
(3) 56.25 (4) 65

**54.** The marked price of an article is 40% more than its cost price. If 15% discount is given on the marked price, then what will be the profit per cent?
(1) 25 (2) 15
(3) 21 (4) 19

**55.** Three partners A, B and C share profit such that three times the share of A is equal to two times the share of B and equal to 12 times the share of C. What is the ratio of the profits of A, B and C respectively?
(1) 3 : 2 : 12 (2) 12 : 2 : 3
(3) 4 : 6 : 1 (4) 1 : 6 : 4

**56.** The average of 8 consecutive natural numbers is 38.5. What is the largest of these 8 numbers?
(1) 41 (2) 39
(3) 42 (4) 45

**57.** If the cost price of 48 articles is equal to the selling price of 32 articles, then what is the profit per cent?
(1) 20 (2) 25
(3) 50 (4) 75

**58.** After deducting 12% from a certain number and then deducting 25% from the remainder, 2508 is left, then what is the initial number?
(1) 3500 (2) 3450
(3) 3970 (4) 3800

**59.** Two trains are moving in the opposite directions at the speeds of 30 km/hr and 45 km/hr respectively, whose lengths are 450 metre and 550 metre respectively. What is the time taken (in seconds) by slower train to cross the faster train?
(1) 48 (2) 54
(3) 62 (4) 72

**60.** A person lent certain sum of money at 10% per annum simple interest. In 20 years the interest amounted to Rs. 500 more than the sum lent. What was the sum lent (in Rs.)?
(1) 200 (2) 500
(3) 1000 (4) 250

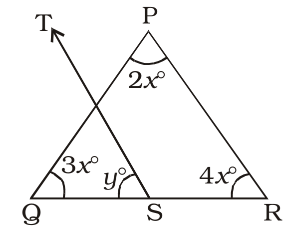
**61.** If $a = 73$, $b = 74$ and $c = 75$, then what is the value of $a^3 + b^3 + c^3 - 3abc$?
(1) 365 (2) 444
(3) 666 (4) 999

**62.** If $x^2 + \left(\frac{1}{x^2}\right) = \frac{31}{9}$ and $x > 0$, then what is the value of $x^3 + \left(\frac{1}{x^3}\right)$?
(1) $\frac{70}{9}$ (2) $\frac{154}{27}$
(3) $\frac{349}{27}$ (4) $\frac{349}{7}$

**63.** What is the value of
$$\frac{(x^2 - 5x + 6)}{(x^2 - 3x + 2)} \div \frac{(x^2 - 7x + 12)}{(x^2 - 5x + 4)}?$$
(1) 1 (2) 2
(3) $\frac{(x-2)}{(x-1)}$ (4) $\frac{(x+3)}{(x+1)}$

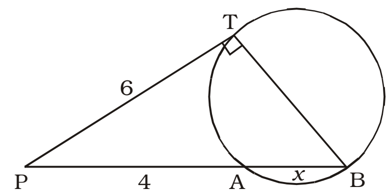
**64.** If $x - \left(\frac{1}{x}\right) = 3$, then what is the value of
$$\frac{(2x^4 + 3x^3 + 13x^2 - 3x + 2)}{(3x^4 + 3)}?$$
(1) $\frac{1}{3}$ (2) $\frac{2}{3}$
(3) $\frac{4}{3}$ (4) $\frac{5}{3}$

**65.** In the given figure ST || RP, then what is the value (in degrees) of supplementary angle of $y$?




(1) 10 (2) 60
(3) 100 (4) 170

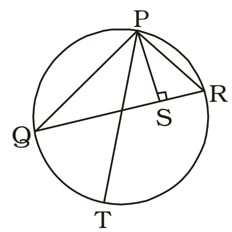
**66.** In the given figure, TB passes through centre O. What is the radius of the circle?




(1) $\frac{(2\sqrt{5})}{3}$ (2) $\frac{(3\sqrt{2})}{5}$
(3) $\frac{(3\sqrt{5})}{2}$ (4) $\frac{(2\sqrt{3})}{5}$

**67.** ΔPQR has sides PQ and PR measuring 983 and 893 units respectively. How many such triangles are possible with all integral sides?
(1) 1876 (2) 90
(3) 1785 (4) 1786

**68.** In the given figure, PQR is a triangle in which, PQ = 24 cm, PR = 12 cm and altitude PS = 8 cm. If PT is the diameter of the circum-circle, then what is the length (in cm.) of circum-radius?



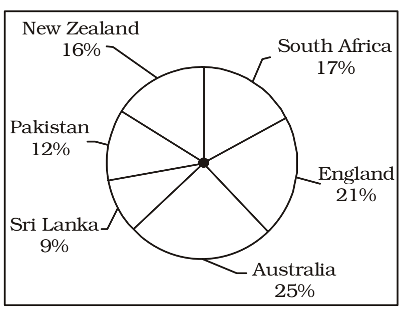

(1) 15 (2) 18
(3) 20 (4) 21

**69.** What is the simplified value of $\sec^6 A - \tan^6 A - 3\sec^2 A \tan^2 A$?
(1) –1 (2) 0
(3) 1 (4) secA tanA

**70.** What is the simplified value of (cosec A – sin A) (sec A – cos A) (tan A + cot A) ?
(1) –1 (2) 0
(3) 1 (4) 2

**71.** What is the simplified value of $(\cos^4 A - \sin^4 A)$?
(1) 0 (2) $2\cos^2 A$
(3) cos2A (4) 1

**Directions (72–75) :** The pie chart given below shows the runs scored by a player against 6 different countries. The total runs scored by the player against these countries are 1600.




**72.** How many runs has the player scored against Pakistan?
(1) 272 (2) 192
(3) 256 (4) 144

**73.** The difference between the runs scored against England and Pakistan is same as the difference between which of the following two countries?
(1) South Africa and Sri Lanka
(2) South Africa and New Zealand
(3) Australia and Sri Lanka
(4) Australia and New Zealand

**74.** What is the difference in runs scored by the player against Australia and Sri Lanka?
(1) 256 (2) 128
(3) 114 (4) 80

**75.** The difference between the total runs scored against Australia and New Zealand and the total runs scored against Sri Lanka and Pakistan make what sectorial angle (in degrees) in the pie chart?
(1) 90 (2) 144
(3) 36 (4) 72

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The CEO only discussed (1)/ the new venture (2)/ with his manager. (3)/ No Error (4)

**77.** If she was marrying Mr. Gupta (1)/ she would have been (2)/ recognized as Mrs. Gupta. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Ankita is disgusted _____ the habit of her brother.
(1) at (2) on
(3) of (4) with

**79.** Due to the security reasons we were _____ from entering into the cockpit of the plane.
(1) denied (2) rejected
(3) stopped (4) warned

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Exorbitant**
(1) Clear (2) Dull
(3) High (4) Rare

**81. Jeopardy**
(1) Angry (2) Injure
(3) Risk (4) Serene

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Churlish**
(1) Belittle (2) Courteous
(3) Fervent (4) Uncouth

**83. Phlegmatic**
(1) Ardent (2) Indifferent
(3) Prohibit (4) Merciless

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Damp squib**
(1) Complete failure
(2) Complete knowledge
(3) To motivate
(4) To squander money

**85. Rise like a phoenix**
(1) Something memorable
(2) Time to answer for one's action
(3) To become successful again
(4) To make people happy

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** The mobile phones have made digital cameras a little **(superfluous)** in today's world.
(1) extinct
(2) obsolete
(3) redundant
(4) No improvement

**87.** If **(you will approach)** her sincerely, she will listen to your problem definitely.
(1) you approach
(2) you are approaching
(3) you will be approaching
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. That which is away from centre**
(1) Eccentric (2) Eclectic
(3) Ellipsis (4) Equine

**89. One who values practicality**
(1) Apotheosis
(2) Pliable
(3) Pragmatist
(4) Realist

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**90.** (1) Pedestrain
(2) Plaintiff
(3) Potatoes
(4) Potassium

**91.** (1) Fabulous
(2) Gorgeous
(3) Heterogeneous
(4) Inocuous

**Directions (92–93) :** Each question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. A sensitive mind easily absorbs the vibrations emanating from the thought of the people it associates with.
Q. We often say that a person is known by the company he keeps.
R. The violence can be made calm by exuding thought of love and co mpassion.
S. Visits to holy places are considered good because the good thoughts of the holy people gathered there and the ensuing vibrations definitely affect one in a positive fashion.
(1) RQPS (2) QRSP
(3) PQRS (4) SRQP

**93.** P. Epistemological idealists (such as Kant) might insist that the only things which can be directly known for certain are ideas.
Q. The approach to idealism by Western philosophers has been different to that of Eastern thinkers.
R. In much of Western thought (though not in such major Western thinkers as Plato and Hegel) the ideal relates to direct knowledge of subjective mental ideas, or images.
S. It is then usually juxtaposed with realism in which the real is said to have absolute existence prior to and independent of our knowledge.
(1) RQPS (2) PQSR
(3) PRQS (4) QRSP

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**Karnataka grows coffee**
(1) Coffee is being grown in Karnataka.
(2) Coffee grown in Karnataka.
(3) Coffee is grown in Karnataka.
(4) Let the coffee be grown in Karnataka.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**Gopal's mother reminded him to take his wallet.**
(1) "Are you going to take your wallet or not?" said Gopal to his mother.
(2) "Don't forget to take your wallet, Gopal" said his mother.
(3) Gopal's mother said, "Remember your wallet, Gopal?
(4) "Here is your wallet Gopal" said his mother.

**Directions (96–100) :** In the following passage, the sentences given with blank are to be filled in with an appropriate word. Select the correct alternative out of the four.

Organizations are institutions in which members compete for status and **(96)**. They **(97)** for the resources of the organization, for example, **(98)** to expand their own departments, for **(99)** advancement and for power to **(100)** the activities of others.

**96.** (1) growth
(2) money
(3) power
(4) success

**97.** (1) compete
(2) expand
(3) rely
(4) run

**98.** (1) finance
(2) infrastructure
(3) resources
(4) source

**99.** (1) career
(2) financial
(3) regional
(4) technological

**100.** (1) affect
(2) control
(3) curb
(4) pursue

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (3) | **3.** (4) | **4.** (1) |
| **5.** (4) | **6.** (2) | **7.** (3) | **8.** (1) |
| **9.** (2) | **10.** (3) | **11.** (2) | **12.** (4) |
| **13.** (1) | **14.** (2) | **15.** (3) | **16.** (4) |
| **17.** (3) | **18.** (2) | **19.** (1) | **20.** (1) |
| **21.** (1) | **22.** (1) | **23.** (1) | **24.** (1) |
| **25.** (4) | **26.** (2) | **27.** (2) | **28.** (2) |
| **29.** (1) | **30.** (3) | **31.** (2) | **32.** (1) |
| **33.** (1) | **34.** (3) | **35.** (3) | **36.** (2) |
| **37.** (4) | **38.** (1) | **39.** (1) | **40.** (1) |
| **41.** (4) | **42.** (3) | **43.** (1) | **44.** (3) |
| **45.** (1) | **46.** (4) | **47.** (3) | **48.** (3) |
| **49.** (4) | **50.** (3) | **51.** (3) | **52.** (1) |
| **53.** (3) | **54.** (4) | **55.** (3) | **56.** (3) |
| **57.** (3) | **58.** (4) | **59.** (1) | **60.** (2) |
| **61.** (3) | **62.** (2) | **63.** (1) | **64.** (3) |
| **65.** (3) | **66.** (3) | **67.** (3) | **68.** (2) |
| **69.** (3) | **70.** (3) | **71.** (3) | **72.** (2) |
| **73.** (4) | **74.** (1) | **75.** (4) | **76.** (1) |
| **77.** (1) | **78.** (1) | **79.** (3) | **80.** (3) |
| **81.** (3) | **82.** (2) | **83.** (1) | **84.** (1) |
| **85.** (3) | **86.** (2) | **87.** (1) | **88.** (1) |
| **89.** (3) | **90.** (1) | **91.** (4) | **92.** (1) |
| **93.** (4) | **94.** (3) | **95.** (2) | **96.** (3) |
| **97.** (1) | **98.** (1) | **99.** (1) | **100.** (2) |

## EXPLANATIONS

**1.** (4) Banana is a fruit. Similarly Ginger is a modified stem.

**2.** (3) J P S W : L Q U X

J $\xrightarrow{+2}$ L, P $\xrightarrow{+1}$ Q, S $\xrightarrow{+2}$ U, W $\xrightarrow{+1}$ X

Similarly,

M R F T : O S H U

M $\xrightarrow{+2}$ O, R $\xrightarrow{+1}$ S, F $\xrightarrow{+2}$ H, T $\xrightarrow{+1}$ U

**3.** (4)

$(8)^2 + 1 = 65 : (9)^2 + 1 = 82$ (8 $\xrightarrow{+1}$ 9)

Similarly,

$(12)^2 + 1 = 145 : (13)^2 + 1 = 170$ (12 $\xrightarrow{+1}$ 13)

**4.** (1) Leaves, Flowers and Stem all are different parts of a tree.

**5.** (4) C $\xrightarrow{+2}$ E $\xrightarrow{+1}$ F

L $\xrightarrow{+2}$ N $\xrightarrow{+1}$ O

R $\xrightarrow{+2}$ T $\xrightarrow{+1}$ U

But, G $\xrightarrow{+2}$ I $\xrightarrow{+2}$ K

**6.** (2) $(7)^2 = 49$, $(8)^2 = 64$ (+1)

$(24)^2 = 576$, $9^3 = 729$

$(21)^2 = 441$, $(22)^2 = 484$ (+1)

$(10)^2 = 100$, $(11)^2 = 121$ (+1)

**7.** (3) Arrangement of words as per order in the dictionary :

(5) Warlike
↓
(1) Waste
↓
(3) Witty
↓
(4) Worcester
↓
(2) Wrong

**8.** (1)

A $\xrightarrow{+2}$ C $\xrightarrow{+3}$ F $\xrightarrow{+2}$ H $\xrightarrow{+3}$ K $\xrightarrow{+2}$ M

**9.** (2) 1 + 2 = 3
3 + 3 = 6
6 + 4 = 10
10 + 5 = 15
15 + 6 = **21**

**10.** (3) Rank of Manu from bottom = 7th
Rank of Shrey from bottom = 7 + 10 = 17th and rank of Shrey from top = 8th
Total number of people in the row = 17 + 8 – 1 = 24

**11.** (2) 7 years ago Sahil's age = $x$ years
Present age of Nihal = $x$ years
According to the question,
$(x + 2) + (x + 6) = 58$
$\Rightarrow 2x + 8 = 58$
$\Rightarrow 2x = 58 - 8$
$\Rightarrow x = \frac{50}{2} = 25$ years
∴ Present age of Sahil = $x + 7$ years
∴ Present age of Ruchi = $x + 7 + 4$ years
After 10 years, age of Ruchi = $x + 7 + 4 + 10$ years = 25 + 7 + 4 + 10 = 46 years

**12.** (4) There is no 'C' letter in the given word. Therefore, the word STRICT cannot be formed.

R E [P] R E S E [N T A] T [I] O N ⇒ PAINT

[R] E P R E [S E N T A] T I [O] N ⇒ SENATOR

R E P [R E S E] N [T] A T I O N ⇒ TREES

**13.** (1)

T R O U P E, E R U P T I O N
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
G I L F K V V I F K G R L M

The code has been generated by taking opposite letters.
Therefore,

G E N I U S
↓ ↓ ↓ ↓ ↓ ↓
T V M R F H

**14.** (2)

| α ⇒ – | β ⇒ × |
|---|---|
| θ ⇒ + | δ ⇒ ÷ |

10 θ 8 β 4 δ 8 α 9 = ?
⇒ ? = 10 + 8 × 4 ÷ 8 – 9
⇒ ? = 10 + 4 – 9 = **5**

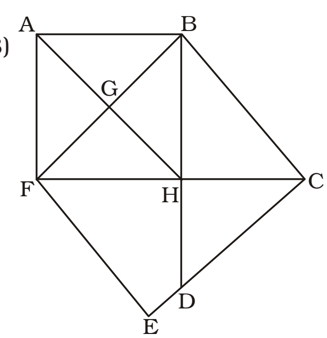
**15.** (3) $9^2$ A $4^2$ B $3^2$ = 56
⇒ $9^2 - (4^2 + 3^2) = 56$
⇒ 81 – (16 + 9) = 56
⇒ 81 – 25 = 56

| A ⇒ – | B ⇒ + |
|---|---|

$7^2$ A $2^2$ B $1^2$ = 44
⇒ $7^2 - (2^2 + 1^2) = 44$
⇒ 49 – (4 + 1) = 44
⇒ 49 – 5 = 44
Therefore,
$11^2$ A $5^2 + 7^2$ = ?
⇒ ? = $11^2 - (5^2 + 7^2)$
⇒ ? = 121 – (25 + 49)
⇒ ? = 121 – 74 = **47**

**16.** (4) (1 × 7 × 6) + (1 + 7 + 6) = 42 + 14 = 56
(1 × 4 × 8) + (1 + 4 + 8) = 32 + 13 = 45
Similarly,
(2 × 3 × 6) + (2 + 3 + 6) = 36 + 11 = 47

**17.** (3)




Quadrilaterals are :
ABHF; ABCH; GBCH; FHDE; FBDE; FBCE; ABCF;

**18.** (2) First Premise is Particular Affirmative (I–type).
Second Premise is Universal Affirmative (A–type).
Some girls are clever.
All clever are hardworking.
I + A ⇒ I–type of Conclusion.
"Some girls are hardworking."
This is the Conclusion II.

**19.** (1) After folding the figure :

* lies opposite #.

$ lies opposite |.

% lies opposite >.

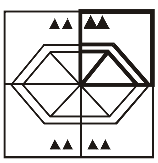
* cannot be on the face adjacent to #. Therefore, we can omit option (2).

$ cannot be on the face adjacent to |. Therefore, we can omit option (3).

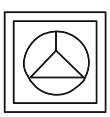
% cannot be on the face adjacent to >. Therefore, we can omit option (4).

**20.** (1) The numbers should be present in the rectangle but outside the circle. Such numbers are 1, 26 and 31.
Required sum = 1 + 26 + 31 = 58

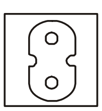
**21.** (1)



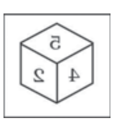
**22.** (1)



**23.** (1)



**24.** (1)



**25.** (4) F = 56, 67, 78, 89, 95
A = 00, 12, 23, 34, 41
T = 59, 65, 76, 87, 98
E = 03, 10, 21, 32, 44

| Option | F | A | T | E |
|---|---|---|---|---|
| (1) | 56 | 00 | 87 | ~~11~~ |
| (2) | ~~96~~ | 41 | 59 | 44 |
| (3) | ~~88~~ | 12 | 76 | ~~33~~ |
| (4) | 78 | 34 | 98 | 21 |

**26.** (2) The Janata Party government rejected the Fifth Five-Year Plan and introduced a new Sixth Five-Year Plan (1978–1980) called rolling plan. The meaning of the Rolling Plan was that now, every year the performance of the plan will be assessed and a new plan will be made next year based upon this assessment. This plan was again rejected by the Indian National Congress government in 1980 and a new Sixth Plan was made.

**27.** (2) Indirect tax is a type of tax where the incidence and impact of taxation does not fall on the same entity. It can be viewed as having the effect of a regressive tax as it imposes a greater burden (relative to resources) on the poor than on the rich, as both rich and poor pay the same tax amount for consumption of a certain quantity of a specific good.

**28.** (2) Article 32 provides the right to Constitutional remedies which means that a person has right to move to Supreme Court (and High Courts also) for getting his fundamental rights protected. While Supreme Court has power to issue writs under article 32, High Courts have been given same powers under Article 226. Article 32 was called the "soul of the constitution and very heart of it" by Dr. Ambedkar. Supreme Court has included it in basic structure doctrine.

**29.** (1) Under Article 368, the majority of the provisions in the Constitution need to be amended by a special majority of the Parliament, that is, a majority of the total membership of each House and a majority of two-thirds of the members of each House present and voting. For creation of new stataes and abolition of legislative councils in state, a simple majority is required.

**30.** (3) The Charter act of 1813 ended the monopoly of the East India Company in India, however the company's monopoly in trade with china and trade in tea was remained intact. The charter act of 1813, for the first time explicitly defined the constitutional position of the British territories in India.

**31.** (2) Battles-Year
- Battle of Buxar – 1764
- Battle of Plassey – 1757
- Battle of Haldighati – 1576

**32.** (1) In winter northwest parts of India get some rains due to cyclonic depressions, better known as western disturbances. As a result of these depressions there are light rains in the plains of the Punjab and Haryana.

**33.** (1) The Arabian Sea branch of Monsoons is roughly three times stronger than the Bay of Bengal branch. It strikes at Western Ghats; and gives rainfall to the western most regions, while rain shadow interiors, the Deccan plateau receive very less rainfall. The Western Ghats mountain range is very tall and blocks the moisture from the southwest monsoon from reaching the Deccan Plateau.

**34.** (3) Mitochondria are rod-shaped organelles that can be considered the power generators of the cell, converting oxygen and nutrients into adenosine triphosphate (ATP). ATP is the chemical energy currency of the cell that powers the cell's metabolic activities. The mitochondria are the site of aerobic respiration.

**35.** (3) The plant cell wall is composed of cellulose. Cellulose is a structural carbohydrate and is considered a complex sugar because it is used in both protection and structure. The plant cell wall consists of three layers. Each layer has its own unique structure and function. From the outermost layer of the cell wall, these layers are identified as the middle lamel-

la, primary cell wall, and secondary cell wall.

**36.** (2) The standard metric unit of power is the Watt. As is implied by the equation for power, a unit of power is equivalent to a unit of work divided by a unit of time. Thus, a Watt is equivalent to a Joule/second.

**37.** (4) Coal is a combustible sedimentary rock composed mostly of carbon and hydrocarbons. The types of coal include peat, lignite, bituminous, and anthracite.

**38.** (1) The light-year is a unit of length used to express astronomical distances. As defined by the International Astronomical Union (IAU), a light year is the distance that light travels in vacuum in one Julian year (365.25 days).

**39.** (1) The first supercomputer, the Control Data Corporation (CDC) 6600, only had a single CPU. Released in 1964, the CDC 6600 was actually fairly small in size. The CPU had 60-bit word length and 60-bit registers, but a very small instruction set, because it only dealt with information that had been pre-processed by the Peripheral Processors.

**40.** (1) An aerosol is a colloid of fine solid particles or liquid droplets, in air or another gas. Aerosols can be natural or anthropogenic. Examples of natural aerosols are fog, dust, forest exudates and geyser steam. They interact both directly and indirectly with the Earth's radiation budget and climate.

**41.** (4) If limestone is heated strongly, it breaks down to form calcium oxide and carbon dioxide. Calcium oxide (CaO), commonly known as quicklime or burnt lime, is a widely used chemical compound. It is yellow when hot, but white when cold.

**42.** (3) Sunderlal Bahuguna, a Gandhian activist and philosopher initiated the Chipko Movement in 1973. The first Chipko action took place spontaneously in April 1973 in the village of Mandal in the upper Alakananda valley and over the next five years spread to many districts of the Himalayas in Uttar Pradesh.

**43.** (1) The aim of the scheme 'Pradhan Mantri Gramin Digital Saksharta Abhiyan' (PMGDISHA) is to make 6 crore rural households digitally literate by March 2019. Digitally literate persons would be able to operate computers/digital access devices (like tablets, smart phones, etc.), send and receive emails, browse internet, access Government Services, search for information, undertaking cashless transactions, etc. and hence use IT to actively participate in the process of nation building.

**44.** (3) Edward Jenner, was the pioneer of smallpox vaccine, the world's first vaccine. The terms 'vaccine' and 'vaccination' are derived from Variolae vaccinae (smallpox of the cow), the term devised by Jenner to denote cowpox.

**45.** (1) Serena Williams is an American professional tennis player. The Women's Tennis Association (WTA) has ranked her world No. 1 in singles on eight separate occasions over the last 15 years from 2002 to 2017. She defeated her sister Venus in 2017 Australian Open. This was Serena Williams' 23 Grand Slam singles title and seventh Australian Open title for her career, both being Open era records, whilst being one shy of Margaret Court's record of 24 in the history of tennis.

**46.** (4) A Three days International Yoga Fest was inaugurated by the Ministry of Information and Broadcasting and Urban Development and Housing, at Talkatora Stadium, New Delhi. The International Yoga Fest was being organized as a Curtain Raiser for International Day of Yoga (IDY) 2017.

**47.** (3) Shatrughan Sinha, who completed close to five decades in the film industry, was presented the Lifetime Achievement Award at the 62nd Jio Filmfare Awards 2017.

**48.** (3) The Windfall by Diksha Basu. Through the novel, Basu is both an insider as well as the impartial outsider who offers a range of humorous perspectives on the Delhi city through its motley characters. This is Basu's second novel (her first was Opening Night published in 2012).

**49.** (4) The 9th edition of the BRICS summit was held in the city of Xiamen in China. This is the second time that the summit was hosted in China, the last one being in the year 2011. At the end of the BRICS summit, the leaders adopted the Xiamen declaration which contained various diplomatic and cooperative guidelines.

**50.** (3) India has signed an agreement with Bhutan for assistance in green and sustainable construction of infrastructure in the Himalayan kingdom. Under the MoU for bilateral technical cooperation in infrastructure engineering, Central Public Works Department (CPWD), will assist in promoting sustainability in the built environment, capacity building through training of Bhutanese manpower, benchmarking in building and road sectors besides deputing engineering experts to Bhutan.

**51.** (3) $45 \times 45 = 2025$

$46 \times 46 = 2116$

$\therefore\ x = 6$

**52.** (1) $\because$ 2 men = 3 women

$\therefore$ 1 man = $\frac{3}{2}$ women

$\therefore$ 6 men and 7 women

$= \left(6 \times \frac{3}{2} + 7\right)$ women

= 16 women

$\because$ 3 women do a work in 96 days.

$\therefore$ 16 women will do the work in $\frac{96 \times 3}{16}$ = 18 days

**53.** (3) Volume of cylinder = $\pi r^2 h$

When radius is decreased by 20%

Volume of cylinder

$= \pi \times \left(\frac{80r}{100}\right)^2 \times h$

$= \frac{16\pi}{25} r^2 h$

Let new height of cylinder be $h_1$.

$\therefore \frac{16\pi}{25} r^2 h_1 = \pi r^2 h$

$\Rightarrow h_1 = \frac{25}{16} h \times 100 = 156.25\, h$

Percentage change in height = 56.25% Increase

**54.** (4) Let the cost price be Rs. 100.

$\therefore$ Marked price = Rs. 140

$\therefore$ Selling price = 85% of 140

$= \frac{140 \times 85}{100}$ = Rs. 119

Profit per cent = (119 – 100)% = 19%

**55.** (3) According to the question,

3A = 2B = 12C

L.C.M. of 3, 2 and 12 = 12

$\therefore \frac{3A}{12} = \frac{2B}{12} = \frac{12C}{12}$

$\Rightarrow \frac{A}{4} = \frac{B}{6} = \frac{C}{1}$

$\therefore$ A : B : C = 4 : 6 : 1

**56.** (3) Let 8 consecutive natural numbers be $x$, $x + 1$, $x + 2$, $x + 3$, $x + 4$, $x + 5$, $x + 6$ and $x + 7$

Average = 38.5

$\therefore x + x + 1 + x + 2 + x + 3 + x + 4 + x + 5 + x + 6 + x + 7$ = 38.5 × 8

$\Rightarrow 8x + 28 = 308$

$\Rightarrow 8x = 308 - 28 = 280$

$\Rightarrow x = \frac{280}{8} = 35$

Largest number of these = $x$ + 7 = 35 + 7 = 42

**57.** (3) Cost Price of 48 articles = Selling price of 32 articles

Profit per cent = $\frac{48 - 32}{32} \times 100$

$= \frac{16}{32} \times 100 = 50\%$

**58.** (4) Initial Number

$= \text{Remainder} \times \frac{100}{100 - x_1} \times \frac{100}{100 - x_2}$

$= 2508 \times \frac{100}{100 - 12} \times \frac{100}{100 - 25}$

$= 2508 \times \frac{100}{88} \times \frac{100}{75}$

= 3800

**59.** (1) Relative speed

= (30 + 45) kmph = 75 km/hr

$= \left(75 \times \frac{5}{18}\right)$ m/sec

Sum of lengths of trains

= (450 + 550) metre

= 1000 metre

Required time = $\frac{1000}{75 \times \frac{5}{18}}$

$= \frac{1000 \times 18}{75 \times 5}$ = 48 seconds

**60.** (2) Let the sum lent be Rs. $x$.

S.I. = $\frac{\text{Principal} \times \text{Time} \times \text{Rate}}{100}$

$= \frac{x \times 20 \times 10}{100}$ = Rs. $2x$

According to the questions,

$2x = x + 500$

$\Rightarrow x$ = Rs. 500

**61.** (3) $a = 73$, $b = 74$, $c = 75$

$a^3 + b^3 + c^3 - 3abc$

$= \frac{1}{2}(a + b + c)\,[(a - b)^2 + (b - c)^2 + (c - a)^2]$

$= \frac{1}{2}(73 + 74 + 75)\,[(73 - 74)^2 + (74 - 75)^2 + (75 - 73)^2]$

$= \frac{1}{2} \times 222\,[1 + 1 + 4]$

= 111 × 6 = 666

**62.** (2) $x^2 + \frac{1}{x^2} = \frac{31}{9}$

$\Rightarrow \left(x + \frac{1}{x}\right)^2 - 2.x.\frac{1}{x} = \frac{31}{9}$

$\Rightarrow \left(x + \frac{1}{x}\right)^2 = \frac{31}{9} + 2$

$\Rightarrow \left(x + \frac{1}{x}\right)^2 = \frac{31 + 18}{9}$

$\Rightarrow x + \frac{1}{x} = \sqrt{\frac{49}{9}} = \frac{7}{3}$

$\therefore x^3 + \frac{1}{x^3}$

$= \left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2} - x \times \frac{1}{x}\right)$

$= \left(\frac{7}{3}\right)\left(\frac{31}{9} - 1\right)$

$= \frac{7}{3} \times \frac{31 - 9}{9} = \frac{7}{3} \times \frac{22}{9}$

$= \frac{154}{27}$

**63.** (1) $\frac{(x^2 - 5x + 6)}{(x^2 - 3x + 2)} \div \frac{(x^2 - 7x + 12)}{(x^2 - 5x + 4)}$

$= \frac{x^2 - 5x + 6}{x^2 - 3x + 2} \times \frac{x^2 - 5x + 4}{x^2 - 7x + 12}$

$= \frac{x^2 - 3x - 2x + 6}{x^2 - 2x - x + 2} \times \frac{x^2 - 4x - x + 4}{x^2 - 3x - 4x + 12}$

$= \frac{x(x - 3) - 2(x - 3)}{x(x - 2) - 1(x - 2)} \times \frac{x(x - 4) - 1(x - 4)}{x(x - 3) - 4(x - 3)}$

$= \frac{(x - 3)(x - 2)}{(x - 2)(x - 1)} \times \frac{(x - 4)(x - 1)}{(x - 3)(x - 4)} = 1$

**64.** (3) $x - \frac{1}{x} = 3$

$\Rightarrow x^2 - 1 = 3x$

$\Rightarrow (x^2 - 1)^2 = (3x)^2$

$\Rightarrow x^4 - 2x^2 + 1 = 9x^2$

$\Rightarrow x^4 + 1 = 9x^2 + 2x^2 = 11x^2$

$\therefore \frac{2x^4 + 3x^3 + 13x^2 - 3x + 2}{3x^4 + 3}$

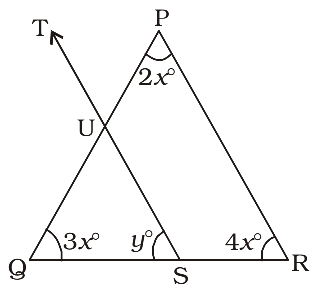
$= \frac{2x^4 + 2 + 3x^3 - 3x + 13x^2}{3(x^4 + 1)}$

$= \frac{2(x^4+1)+3x(x^2-1)+13x^2}{3(x^4+1)}$

$= \frac{2 \times 11x^2 + 3x \times 3x + 13x^2}{3(x^4+1)}$

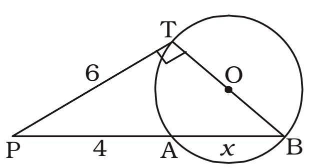
$= \frac{22x^2 + 9x^2 + 13x^2}{3 \times 11x^2} = \frac{44x^2}{33x^2} = \frac{4}{3}$

**65.** (3) ST || RP
$\angle QUS = \angle QPR = 2x°$
$\angle QSU = \angle QRP = 4x° = y$



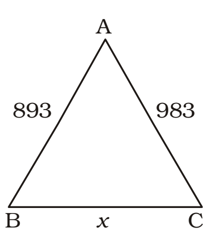

$\Delta QUS$,
$2x° + 4x° + 3x° = 180°$
$\Rightarrow 9x° = 180°$
$\Rightarrow x° = 20°$
$\therefore y = 4x° = 4 \times 20° = 80°$
$\therefore$ Supplementary angle of $y$
$= 180° - 80° = 100°$

**66.** (3)



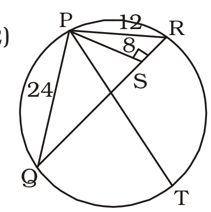

$PA \times PB = PT^2$
$4 \times (4 + x) = 6^2$
$\Rightarrow 4 + x = \frac{36}{4} = 9$
$\Rightarrow x = 9 - 4 = 5$ cm.
$TB^2 = PB^2 - PT^2$
$= 9^2 - 6^2 = 81 - 36 = 45$
$\Rightarrow TB = \sqrt{45} = 3\sqrt{5}$
$\therefore r = \frac{3\sqrt{5}}{2}$ cm.

**67.** (3)




Let BC = $x$
The sum of two sides of a triangle is greater than its third side.
$\therefore x + 893 > 983$
$\Rightarrow x > 983 - 893$
$\Rightarrow x > 90$ .....(i)
Again, $x < 893 + 983$
$\Rightarrow x < 1876$ .....(ii)
From equations (i) and (ii),
$90 < x < 1876$
Required number of triangles
= (1876 – 90 – 1) = 1785

**68.** (2)




Area of $\Delta PQR = \frac{1}{2} \times QR \times 8$

Again, $R = \frac{abc}{4\Delta}$

$= \frac{24 \times 12 \times QR}{4 \times \frac{1}{2} \times QR \times 8}$

$= \frac{24 \times 12}{16} = 18$ cm.

**69.** (3) $\sec^6A - \tan^6A - 3\sec^2A\tan^2A$
$= (\sec^2A)^3 - (\tan^2A)^3 - 3\sec^2A\tan^2A(\sec^2A - \tan^2A)$
$[\because \sec^2A - \tan^2A = 1]$
$= (\sec^2A - \tan^2A)^3 = 1^3 = 1$

**70.** (3) (cosecA – sinA) (secA – cosA) (tan A + cot A)

$\left(\frac{1}{\sin A} - \sin A\right)\left(\frac{1}{\cos A} - \cos A\right)\left(\frac{\sin A}{\cos A} + \frac{\cos A}{\sin A}\right)$

$= \left(\frac{1-\sin^2 A}{\sin A}\right)\left(\frac{1-\cos^2 A}{\cos A}\right)\left(\frac{\sin^2 A + \cos^2 A}{\sin A \cos A}\right)$

$= \frac{\cos^2 A}{\sin A} \times \frac{\sin^2 A}{\cos A} \times \frac{1}{\sin A \cos A}$
$= 1$

**71.** (3) $\cos^4A - \sin^4A$
$= (\cos^2 A)^2 - (\sin^2 A)^2$
$= (\cos^2A + \sin^2A)(\cos^2A - \sin^2A)$
$= 1 \times \cos 2A = \cos 2A$

**72.** (2) Runs scored by the player against Pakistan = 12% of 1600

$= 1600 \times \frac{12}{100} = 192$

**73.** (4) The difference between runs scored against England and Pakistan (= 21 – 12 = 9%) is same as the difference between the runs scored against Australia and New Zealand (= 25 – 16 = 9%)

**74.** (1) Difference between the runs scored by the player against Australia and Sri Lanka
= (25 – 9)% of 1600

$= \frac{16 \times 1600}{100} = 256$

**75.** (4) Total runs scored against Australia & New Zealand
= (25% + 16%) of 1600
= 41% of 1600

$= \frac{1600 \times 41}{100} = 656$

Total runs scored against Sri lanka & Pakistan
= 21% of 1600

$= \frac{1600 \times 21}{100} = 336$

Difference = 656 – 336 = 320

Sectorial angle $= \frac{320}{1600} \times 360°$
$= 72°$

**76.** (1) Here, the placement of 'only' (adverb) is not appropriate; use it before 'The CEO', i.e.
only (= and nobody else) the CEO or the CEO discussed only → correct expression
Let us discuss some instances of the placement of 'only':
**Only** (= Nobody else) he died yesterday.
He only (= what else) died yesterday.
He died yesterday only (= specifying correct day).
Only (= did nothing else) discussed → does not make sense
**Note :** To create a meaningful sentence, you should place 'only' next to the noun, subject, verb or phrase you are trying to modify. When the word 'only' is misplaced in a sen-

tence, it becomes a "misplaced modifier".

**77.** (1) It is past conditional. It is formed as follows :
If + subject (past perfect) + had + $V_3$... subject + would have + $V_3$ + ...
**Look at the sentences :**
If he had come to me, I would have helped him.
If it had rained on time, crops would not have been destroyed.
So, correct expression ⇒ If she had married Mr. Gupta, she...

**78.** (1) **Disgusted with somebody** ⇒ feeling or showing disgust for someone.
**Look at the sentences :**
I was disgusted with myself for eating so much.
I was disgusted at/by the sight.

**79.** (3) **Deny/reject (Verb)** = refuse; turn down; rebuff
**Warn (Verb)** = alert; apprise; inform.
**Stop someone from doing something (idiom)** → to prevent someone from doing something.
**Look at the sentence :**
I can't stop her from running away.

**80.** (3) **Exorbitant/high (Adjective)** = excessive; sky–high.
**Look at the sentence :**
Exorbitant prices of designer clothes.
**Clear (Adjective)** = understandable; comprehensible.
**Dull (Adjective)** = boring; uninteresting
**Rare (Adjective)** = unique; exceptional.

**81.** (3) **Jeopardy/risk (Noun)** = danger; peril.
**Look at the sentence :**
The whole peace process is in jeopardy.
**Angry (Adjective)** = annoyed; vexed.
**Injure (Verb)** = hurt; harm
**Serene (Adjective)** = calm; composed.

**82.** (2) **uncouth/churlish (Adjective)** = rude; ill–mannered.
**Look at the sentence :**
It seems churlish to complain.
**Courteous (Adjective)** = polite; well-mannered.
**Look at the sentence :**
She was courteous.
**Belittle (Verb)** = denigrate; disparage; deprecate.
**Fervent (Adjective)** = passionate; vehement.

**83.** (1) **Phlegmatic (Adjective)** = (of a person) having an unemotional calm disposition; the phlegmatic British character.
**Ardent (Adjective)** = passionate; avid : an ardent supporter of the conservative cause.
**Indifferent (Adjective)** = unconcerned about; uninterested; aloof in.
**Prohibit (Verb)** = forbid; bar; ban.
**Merciless (Adjective)** = cruel; without mercy.

**84.** (1) **complete failure**
**Look at the sentence :**
The party thrown by the MLA to woo his supporters was a damp squib.
**Damp (Adjective)** = slightly wet; sticky.
**Squib (Noun)** = a small firework that burns with a hissing sound before exploding.

**85.** (3) **to become successful again**
**Look at the sentence :**
The team began their brave attempt to rise like a phoenix from the ashes.
**Phoenix (Noun)** = a bird (in Egyption mythology) that lived in the desert for 500 years and then consumed itself by fire, later to rise renewed from its ashes.

**86.** (2) **Obsolete (Adjective)** = (of a product) outdated; out of date
**Extinct (Adjective)** = of species vanished; lost; died out.
**Redundant (Adjective)** = unneeded; unessential; unnecessary.
**Superfluous (Adjective)** = unessential; unrequired
**Note :** A product/An idea becomes obsolete.

**87.** (1) It is future conditional. It is formed as follows :
If + subject + simple present + ..... subject + simple future + object....
**Look at the sentences :**
If you study hard, you will get through the exam.
If you water plants daily, they will not fade away.

**88.** (1) **Eclectic (Adjective)** = wide; broad
**Ellipsis (Noun)** = a set of dots (...) indicating an ellipsis.
**Equine (Adjective)** = relating to horses.

**89.** (3) **Apotheosis (Noun)** = climax; peak; pinnacle.
**Pliable (Adjective)** = flexible; easily bent; elastic.
**Realist (Noun)** = a person who accepts a situation as it is and is prepared to deal with it.

**90.** (1) Correct spelling ⇒ pedestrian (= walker, stroller).

**91.** (4) Correct spelling ⇒ innocuous (= not harmful).

**94.** (3) **Coffee is grown in Karnataka.**
It is active voice of simple present tense. Its passive voice is formed as follows :
Subject + is/am/are + $V_3$ + by + object.

**96.** (3) **Status (Noun)** = high prestige
**Power (Noun)** = capacity to direct the influence of others
**Note :** growth, money and success come with status.

**97.** (1) **Compete (Verb)** = clash; vie; contend
**Expand (Verb)** = increase in size; enlarge.
**Rely (Verb)** = depend; bank upon.
**Compete for something** → to put forth effort in an attempt to gain something.

**98.** (1) **Finance (Noun)** = funds; money; cash; wealth.
**Note :** An enterprise needs monetary support to expand itself.

**99.** (1) **Career advancement** = It is one of the most important elements for an employee's satisfaction and retention at a company. Clear opportunities for career advancement are a powerful motivator for an employee.

**100.** (2) **Control (Verb)** = to influence or direct people's behaviour
**Curb (Verb)** = hold back; restrain; keep in check.
**Note :** An organization needs power to influence other competitors so that their competitors may follow them.

❑❑❑

**SET 22**

# SOLVED PAPER
# SSC CGL TIER-I (CBE) EXAM

**Held on : 16.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** In the following question, select the related word from the given alternatives :
Frog : Amphibian : : Lizard : ?
(1) Rodent (2) Mammal
(3) Reptile (4) Insect

**2.** In the following question, select the related letters from the given alternatives :
DJLQ : WQOJ : : DMSW : ?
(1) WNHD (2) WNDH
(3) WHND (4) WWCC

**3.** In the following question, select the related number from the given alternatives :
7 : 56 : : 11 : ?
(1) 121 (2) 123
(3) 132 (4) 134

**4.** In the following question, select the odd word from the given alternatives :
(1) Music (2) Singer
(3) Director (4) Actor

**5.** In the following question, select the odd letters from the given alternatives :
(1) JGD (2) NLI
(3) XUR (4) QNK

**6.** In the following question, select the odd number from the given alternatives :
(1) 71 (2) 83
(3) 89 (4) 93

**7.** Arrange the given words in the sequence in which they occur in the dictionary :
1. Counter 2. Crop
3. Create 4. Carnation
5. Creator
(1) 41352 (2) 41253
(3) 43125 (4) 41325

**8.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series :
A, E, J, N, S, W, ?
(1) Z (2) A
(3) B (4) C

**9.** In the following question, select the missing number from the given series :
3, 7, 16, 35, ?
(1) 73 (2) 74
(3) 78 (4) 82

**10.** The ratio of present ages of L and N is 7 : 5. If the age of N after seven years will be 32 years, then what is the present age (in years) of L?
(1) 49 (2) 35
(3) 28 (4) 42

**11.** Pointing towards a girl, Chetan said "She is the daughter of the only child of my grandmother". How is Chetan related to that girl?
(1) Father (2) Son
(3) Brother (4) Husband

**12.** In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word :
NIGHTWALKER
(1) TALKER (2) TAILER
(3) WALLER (4) WINER

**13.** In a certain code language, "SPICEY" is written as "ELOUAY" and "PONDER" is written as "JKLNAZ". How is "HOUSED" written in that code language?
(1) QKDZAO (2) GNTRDC
(3) WQJFGU (4) DKQAOZ

**14.** If "×" denotes "added to", "÷" denotes "subtracted from", "+" denotes "divided by" and "–" denotes "multiplied by", then
$14 \times 12 - 16 \div 18 = ?$
(1) 430 (2) 180
(3) 168 (4) 188

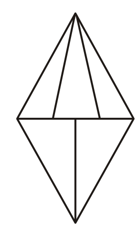
**15.** If $18 \times 12 = 206$ and $19 \times 22 = 408$, then $23 \times 36 = ?$
(1) 878 (2) 818
(3) 794 (4) 776

**16.** In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives :

| 2 | 4 | 1 |
|---|---|---|
| 5 | 3 | 5 |
| 7 | 2 | 6 |
| 39 | 17 | ? |

(1) 11 (2) 31
(3) 32 (4) 37

**17.** How many triangles are there in the given figure ?

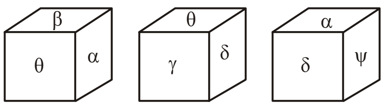


(1) 8 (2) 9
(3) 10 (4) 12

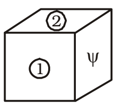
**18.** In the following question below are given some statements followed by some Conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the Conclusions and then decide which of the given Conclusion logically follows the given statements.
**Statements :**
I. Some cups are plates.
II. All spoons are blue.
III. No plate is spoon.
**Conclusions :**
I. Some cups are not spoon.
II. Some plates are not blue.

III. Some cups are not blue.
IV. Some blue are not plates.
(1) Only Conclusions I, III and IV follow.
(2) Only Conclusions II and IV follow.
(3) Only Conclusions II, III and IV follow.
(4) Only Conclusions I and IV follow.

**19.** Three positions of a cube are shown below :

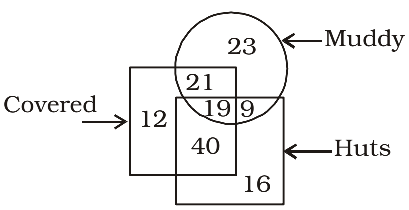


Which symbol will come on two faces marked '1 and 2' ?



(1) θ and δ (2) α and β
(3) θ and β (4) θ and γ

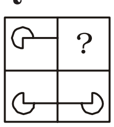
**20.** In the given figure, how many huts are covered and muddy?



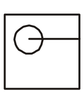
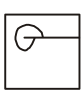

(1) 28 (2) 40
(3) 33 (4) 19

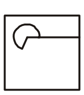
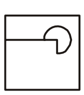
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



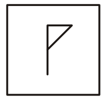
**Answer Figures :**

(1)  (2) 

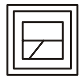
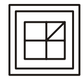
(3)  (4) 

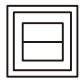
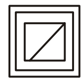
**22.** From the given answer figures, select the one in which the question figure is hidden/ embedded.

**Question Figure :**



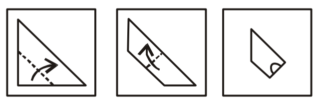
**Answer Figures :**

(1)  (2) 

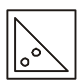
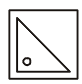
(3)  (4) 

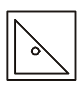
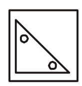
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



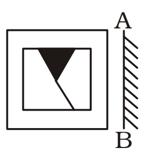
**Answer Figures :**

(1)  (2) 

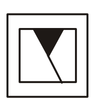
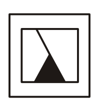
(3)  (4) 

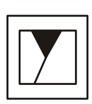
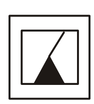
**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'P' can be represented by 11, 23, etc., and 'K' can be represented by 65, 89. etc. Similarly, you have to identify the set for the word **"TAKE".**

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | A | N | S | T | P |
| 1 | T | P | A | N | S |
| 2 | N | S | T | P | A |
| 3 | P | A | N | S | T |
| 4 | S | T | P | A | N |

**Matrix-I**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | R | E | P | K | O |
| 6 | K | O | R | E | P |
| 7 | E | P | K | O | R |
| 8 | O | R | E | P | K |
| 9 | P | K | O | R | E |

(1) 10, 32, 66, 56
(2) 41, 00, 89, 75
(3) 03, 43, 78, 99
(4) 22, 13, 97, 87

## GENERAL AWARENESS

**26.** In which of the following market forms a firm does not exercise control over price?
(1) Mixed Competition
(2) Monopoly
(3) Oligopoly
(4) Perfect Competition

**27.** Which of the following is represented by 'Lorenz Curve'?
(1) Employment
(2) Inflation
(3) Deflation
(4) Income Distribution

**28.** Which of the following is not a fundamental duty?
(1) To abide by constitution and respect the National Flag
(2) To promote harmony and brotherhood
(3) To uphold and protect the sovereignty
(4) Abolition of titles except military and academic

**29.** Which article can be used by The President of India to declare financial emergency?
(1) Article 32
(2) Article 349
(3) Article 360
(4) Article 365

**30.** The Poona Pact was signed between Mahatma Gandhi and ____.
(1) Muhammad Ali Jinnah
(2) Lord Irwin
(3) Subhash Chandra Bose
(4) B. R. Ambedkar

**31.** Which Governor General abolished the 'Sati System' in India?
(1) Lord Canning
(2) Lord Ripon
(3) Lord William Bentinck
(4) Lord Dalhousie

**32.** Which of the following is NOT a primary green house gas in the earth's atmosphere?
(1) Methane (2) Ozone
(3) Nitrous oxide
(4) Hydrogen

**33.** Which type of forest is most widespread in India?
(1) Tropical Evergreen Forests
(2) Tropical Deciduous Forests
(3) Montane Forests
(4) Mangrove Forests

**34.** Which blood group is universal donor?
(1) O+ (2) O–
(3) AB– (4) AB+

**35.** In how many parts is the human brain divided?
(1) 2 (2) 3
(3) 4 (4) 5

**36.** In which of the following class can we put Adrenaline?
(1) Hormone (2) Enzyme
(3) Protein (4) Fat

**37.** Supercooling is cooling of liquid ___.
(1) below melting point
(2) below freezing point
(3) at melting point
(4) above melting point

**38.** When light passes from one medium to another, this phenomenon of change in its direction is called ___.
(1) Refraction
(2) Diffraction
(3) Propagation
(4) No option is correct

**39.** Which among the following is not an input device?
(1) Plotter
(2) Magnetic Ink Character Recognition (MICR)
(3) Optical Mark Recognition (OMR)
(4) Barcode Reader

**40.** Which of the following is also known as Carbolic Acid?
(1) Phenol
(2) Hydroxide
(3) Sulphuric Acid
(4) Ethanol

**41.** Who discovered electron?
(1) E. Goldstien
(2) J. J. Thomson
(3) Ernest Rutherford
(4) J. Chadwick

**42.** Who is a major driving force behind the 'Narmada Bachao Andolan'?
(1) Anna Hazare
(2) Medha Patkar
(3) Shantha Sinha
(4) Manasi Pradhan

**43.** 'Udey Desh ka Aam Nagrik' (UDAN) scheme for regional air connectivity will provide travel to tier 2 and tier 3 cities at the rate of Rs. ____ per hour.
(1) 1500 (2) 2000
(3) 2500 (4) 3000

**44.** Who invented radar?
(1) Fred Morrison
(2) A H Taylor and Leo C. Young
(3) Van Tassel
(4) W. K. Roentgen

**45.** David Warner plays cricket for which country?
(1) England
(2) New Zealand
(3) Austr alia
(4) Sri Lan ka

**46.** Japanese art 'Ikebana' is related to ___.
(1) paper folding
(2) flower arrangement
(3) tree cutting
(4) sand art

**47.** Who was awarded the 2017 Padma Bhushan Award in the field of Art-Music?
(1) Devi Prasad Dwivedi
(2) Anuradha Paudwal
(3) Vishwa Mohan Bhatt
(4) K. J. Yesudas

**48.** Who has recently launched his autobiography titled 'An Unsuitable Boy'?
(1) Rishi Kapoor
(2) MS Dhoni
(3) Karan Johar
(4) Vikram Seth

**49.** Which of the following country is not a member of 'The Indian Ocean Rim Association (IORA)'?
(1) Sri Lanka
(2) Mauritius
(3) Seychelles
(4) China

**50.** Which country has launched the longest bullet train line covering a distance of 2252 kilometres in January, 2017?
(1) Japan (2) China
(3) Afghanistan
(4) Myanmar

## QUANTITATIVE APTITUDE

**51.** What is the sum of all prime numbers between 60 and 80?
(1) 272 (2) 284
(3) 351 (4) 414

**52.** A and B have to type a book together containing 120 pages. A takes 9 hrs to type 36 pages and B takes 5 hrs to type 40 pages. A typed first 60 pages alone and the last 60 pages were typed by A and B together. How much time (in hours) will be taken to type the complete book?
(1) 24 (2) 20
(3) 12 (4) 15

**53.** ABC is a right angled triangle in which ∠A = 90°, AB = 5 cm and AC = 12 cm. What is the approximate volume (in $cm^3$) of the double cone formed by rotating the triangle about its hypotenuse?
(1) 145 (2) 290
(3) 435 (4) 580

**54.** A trader allows a discount of 15% on a trolley bag having list price of Rs. 1360 and earns a profit of 15.6%. What is the cost price (in Rs.) of the trolley bag?
(1) 1000 (2) 1005
(3) 1050 (4) 1156

**55.** The price of a diamond is directly proportional to square of its weight. A man broke the diamond accidently in three pieces in the ratio of 3 : 5 : 7 and thus lost Rs. 42600. What was the original price (in Rs.) of the diamond?
(1) 11786 (2) 60000
(3) 67500 (4) 75000

**56.** The average weight of 100 students is 32 kg. The average weight of first 49 students is 30 kg. and that of last 50 students is 34 kg. What is the weight (in kg.) of the 50th student?
(1) 25 (2) 30
(3) 32 (4) 33

**57.** By selling 90 pens for Rs. 80 a man loses 20%. What should be the selling price (in Rs.) of 90 pens for 20% profit?
(1) 90 (2) 100
(3) 110 (4) 120

**58.** Raman spends 80% of his income. If his income is increased by 25% and the expenditure increases by 10%, then what will be the percentage increase in his savings?
(1) 17 (2) 70
(3) 77 (4) 85

**59.** A man made four trips of equal distances. His speed on first trip was 60 km/hr and in each subsequent trip his speed was half of the previous trip. What is the average speed (in km/hr) of the man in these four trips?
(1) 16 (2) 30
(3) 28.125 (4) 27.5

**60.** Rohan borrowed a certain sum of money at simple interest. The rate of interest was 3% per annum for first 3 years, 4% per annum for next 5 years and 6% per annum for next 7 years. If he paid Rs. 2059 as interest, then what is the sum borrowed (in Rs.)?
(1) 2400 (2) 2500
(3) 2900 (4) 3100

**61.** If $x + y = 5$, $x^3 + y^3 = 35$, then what is the positive difference between $x$ and $y$?
(1) 0 (2) 1
(3) 5 (4) 6

**62.** If $x = \sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}}$, then what is the value of $(x^2 + x - 9)$ ?
(1) 0 (2) $3\sqrt{2}$
(3) $3\sqrt{3}$ (4) $5\sqrt{3}$

**63.** If $x + y + z = 0$. then what is the value of $\frac{x^2}{3z}+\frac{y^3}{3xz}+\frac{z^2}{3x}$?
(1) 0 (2) $xz$
(3) $y$ (4) $3y$

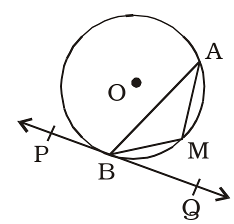
**64.** If $x - \frac{1}{x} = 1$, then what is the value of

$$\frac{1}{x}\left(\frac{1}{x-1}-\frac{1}{x+1}+\frac{1}{x^2+1}-\frac{1}{x^2-1}\right)?$$

(1) $\pm\sqrt{5}$ (2) $\frac{2}{5}$
(3) $\pm\frac{2}{\sqrt{5}}$ (4) $\pm\frac{\sqrt{5}}{2}$

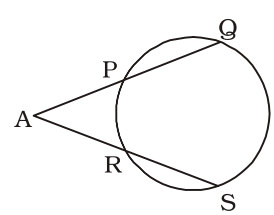
**65.** PQ is a diameter of a circle with centre O. RS is a chord parallel to PQ that subtends an angle of 40° at the centre of the circle. If PR and QS are produced to meet at T, then what will be the measure (in degrees) of ∠PTQ?
(1) 55 (2) 60
(3) 70 (4) 90

**66.** In the given figure, ∠AMB = 130°, then what is the value (in degrees) of ∠ABQ?




(1) 40 (2) 50
(3) 60 (4) 90

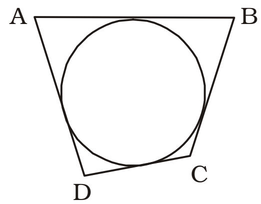
**67.** In the given figure, AP = 3 cm, AR = 6 cm and RS = 9 cm, then what is the value (in cm.) of PQ?




(1) 9 (2) 12
(3) 18 (4) 27

**68.** In the given figure, a circle touches quadrilateral ABCD. If AB = $2x + 3$, BC = $3x - 1$,

CD = $x$ + 6 and DA = $x$ + 4, then what is the value of $x$?




(1) 3 (2) 4.5
(3) 6 (4) 6.5

**69.** If $\text{cosec}^2\,\theta = \frac{625}{576}$, then what is the value of $\left[\frac{(\sin\theta - \cos\theta)}{\sin\theta + \cos\theta}\right]$?

(1) 1 (2) $\frac{31}{17}$
(3) $\frac{17}{31}$ (4) $\frac{14}{25}$

**70.** What is the value of

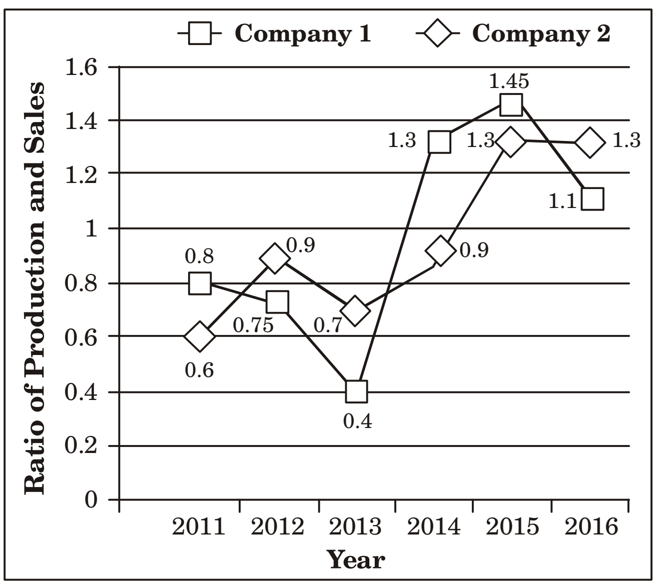
$\frac{3}{2}\left(\frac{\cos 39}{\sin 51}\right) - \sqrt{\sin^2 39 + \sin^2 51}$ ?

(1) $\frac{1}{2}$ (2) $\frac{5}{2}$
(3) 0
(4) Both $\frac{1}{2}$ and $\frac{5}{2}$

**71.** If $\cot A = \left[\frac{\sin B}{(1 - \cos B)}\right]$, then what is the value of cot 2A?

(1) $\cot\left(\frac{B}{2}\right)$ (2) cot 2B
(3) cot B (4) tan B

**Directions (72–75) :** The line chart given below shows the ratio of production to sales of two bike-manufacturing firms over the period of 6 years.




Assume if in any year sales is more than production then both the companies have sufficient stock to meet such instances.

**72.** If the sales of company 1 in year 2015 was 50000 units, then what was its production (in units) in year 2015?
(1) 38460
(2) 45000
(3) 52000
(4) 65000

**73.** The production of company 2 in year 2012 is 30000. If sales of company 2 in year 2012 and 2013 are same, then what was its production (in units) in year 2013?
(1) 100000 (2) 16000
(3) 30000 (4) 20000

**74.** The production of company 1 in year 2014 is 18000 and sales of company 2 in year 2012 is 15000. What is the ratio of difference in sales and production of company 1 in year 2014 and that of company 2 in year 2012?
(1) 8 : 15 (2) 7 : 16
(3) 9 : 11 (4) 3 : 8

**75.** Company 1 sold 20000 bikes each year from 2011 to 2016 and company 2 sold 10000 bikes each year from 2011 to 2016. What is the difference (in units) in average yearly production of companies 1 and 2?
(1) 6733.3 3 (2) 7500
(3) 8666.66 (4) 9333.33

## ENGLISH COMPREHENSION

**Dirctions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** He did not go (1)/ to the temple on foot (2)/ he went there by the car. (3)/ No Error (4)

**77.** She ascended (1)/ to the throne (2)/ at the early age of seven. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

**78.** Neha's mother was annoyed with her as she could not _____ her examination.
(1) get off (2) get on
(3) get upon (4) get through

**79.** I shall ______ her if she apologises to me for her misbehaviour.
(1) pardon (2) forgive
(3) punish (4) reprimand

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Ebullient**
(1) Deceitful
(2) Insincerity
(3) Enthusiastic
(4) Prejudice

**81. Truculent**
(1) Ferocious (2) Luxurious
(3) Luscious (4) Delicious

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Niggardly**
(1) Mingy (2) Inefficient
(3) Generous (4) Sinful

**83. Dissident**
(1) Alienated (2) Iconoclast
(3) Divisive (4) Orthodox

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

**84. Bear the palm**
(1) To face the consequences
(2) To meet death
(3) To be able to predict future
(4) To win

**85. To give the devil his due**
(1) To punish the wrong person
(2) To give credit to even a notorious person
(3) To let the enemy learn the lesson on his own
(4) To stand in the way of the devil

**Directions (86–87) :** Improve the bracketed part of each sentence.

**86. (No sooner the advertisement regarding the launch of new smart phone appeared)** than there was a rush on the online website for prebooking the same.
(1) No sooner the advertisement regarding the launched of new smart phone appeared
(2) No sooner did the advertisement regarding the launch of new smart phone appeared
(3) The advertisement regarding the launch of new smart phone was no sooner having appeared
(4) No improvement

**87.** The equipment is **(adapted to)** cotton industries.
(1) Adapted from
(2) Adapted for
(3) Adapted of
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**88. One who loads and uploads ships**
(1) Stevedore
(2) Transgressor
(3) Lapidist
(4) Reticent

**89. Belief or opinion contrary to what is generally accepted**
(1) Invocation
(2) Incognito
(3) Heresy
(4) Mercenary

**Directions (90–91) :** In the following questions, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

**90.** (1) Tomorrow
(2) Occurence
(3) Temperature
(4) Preferable

**91.** (1) Receeding
(2) Cemetery
(3) Parallelogram
(4) Rehearsal

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92.** P. If all the requirements of the villages are satisfied there by itself, then the peasants will usefully utilize their spare time.
Q. Let us consider the village artisans.
R. This will also provide employment to all the educated people of the villages.
S. Having discussed the problems and requirements of rural life.
(1) SQPR (2) PRQS
(3) QRPS (4) PSQR

**93.** P. Practical farming includes knowledge of fruit and vegetable farming.
Q. These schools need not necessarily have their own farms because the village itself will provide ample field work facilities.
R. Agriculture should be made compulsory in higher secondary schools; alternatively, the urban students can be taught town-planning, industrial planning etc.
S. Therefore, at this stage, only theoretical education for the village students would suffice.
(1) QRSP (2) RPQS
(3) RSPQ (4) QPRS

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**I saw him leaving the movie theatre.**
(1) He was seen leaving the movie theatre by me.
(2) Leaving the movie theatre he was seen by me.
(3) He was seen to be leaving the movie theatre.

(4) He had been seen leaving the movie theatre.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**The principal said, 'Be quiet, girls."**

(1) The principal called the girls and ordered them to be quiet.
(2) The principal commanded the girls that they be quiet.
(3) The principal urged the girls to be quiet.
(4) The principal said that the girls should be quiet.

**Directions (96–100) :** In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

Modern man is imprisoned by his time-table and his routine. His life is all care and **(<u>96</u>)**. He does not have **(<u>97</u>)** for anything but his duties and occupation for **(<u>98</u>)** money. Men, in all **(<u>99</u>)** may have been prone to this disease and; indeed, we in India may not have been **(<u>100</u>)** by it to the extent that people in western countries have been.

**96.** (1) wisdom (2) success
(3) worry (4) anxiety

**97.** (1) resources
(2) time
(3) material (4) money

**98.** (1) making (2) minting
(3) collecting (4) spending

**99.** (1) spheres (2) streams
(3) areas (4) ages

**100.** (1) infected
(2) inflicted
(3) accompanied
(4) associate

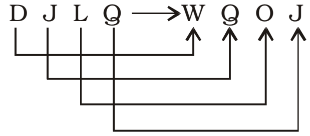
## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (3) | **2.** (1) | **3.** (3) | **4.** (1) |
| **5.** (2) | **6.** (4) | **7.** (1) | **8.** (3) |
| **9.** (2) | **10.** (2) | **11.** (3) | **12.** (3) |
| **13.** (1) | **14.** (4) | **15.** (2) | **16.** (2) |
| **17.** (2) | **18.** (4) | **19.** (2) | **20.** (4) |
| **21.** (4) | **22.** (2) | **23.** (1) | **24.** (3) |
| **25.** (2) | **26.** (4) | **27.** (4) | **28.** (4) |
| **29.** (3) | **30.** (4) | **31.** (3) | **32.** (4) |
| **33.** (2) | **34.** (2) | **35.** (2) | **36.** (1) |
| **37.** (2) | **38.** (1) | **39.** (1) | **40.** (1) |
| **41.** (2) | **42.** (2) | **43.** (3) | **44.** (2) |
| **45.** (3) | **46.** (2) | **47.** (3) | **48.** (3) |
| **49.** (4) | **50.** (2) | **51.** (3) | **52.** (2) |
| **53.** (2) | **54.** (1) | **55.** (3) | **56.** (2) |
| **57.** (4) | **58.** (4) | **59.** (1) | **60.** (3) |
| **61.** (2) | **62.** (4) | **63.** (3) | **64.** (*) |
| **65.** (3) | **66.** (2) | **67.** (4) | **68.** (3) |
| **69.** (3) | **70.** (4) | **71.** (3) | **72.** (4) |
| **73.** (2) | **74.** (1) | **75.** (4) | **76.** (3) |
| **77.** (2) | **78.** (4) | **79.** (2) | **80.** (3) |
| **81.** (1) | **82.** (3) | **83.** (4) | **84.** (4) |
| **85.** (2) | **86.** (*) | **87.** (2) | **88.** (1) |
| **89.** (3) | **90.** (2) | **91.** (1) | **92.** (1) |
| **93.** (2) | **94.** (1) | **95.** (3) | **96.** (3) |
| **97.** (2) | **98.** (1) | **99.** (4) | **100.** (2) |

## EXPLANATIONS

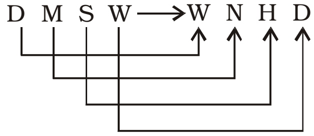
**1.** (3) Frogs belong to amphibians of the order Anura. Similarly, lizards belong to Reptile.

**2.** (1) D J L Q ⟶ W Q O J



Pairs of opposite letters.
Similarly,

D M S W ⟶ W N H D



**3.** (3) 7 × (7 + 1)
⇒ 7 × 8 = 56
Similarly,
11 × (11 + 1)
⇒ 11 × 12 = 132

**4.** (1) Except Music, all others are such persons who exhibit skill in certain fields. Music refers to the arrangement of sounds in a pleasing sequence.

**5.** (2) $J \xrightarrow{-3} G \xrightarrow{-3} D$

$X \xrightarrow{-3} U \xrightarrow{-3} R$

$Q \xrightarrow{-3} N \xrightarrow{-3} K$

But,

$N \xrightarrow{-2} L \xrightarrow{-3} I$

**6.** (4) Except the number 93, all other numbers are Prime Numbers.

$\frac{93}{3} = 31$

**7.** (1) Arrangement of words as per order in the dictionary :
4. Carnation
↓
1. Counter
↓
3. Create
↓
5. Creator
↓
2. Crop

**8.** (3)

$A \xrightarrow{+4} E \xrightarrow{+5} J \xrightarrow{+4} N \xrightarrow{+5} S \xrightarrow{+4} W \xrightarrow{+5} \boxed{B}$

**9.** (2) 3 × 2 + 1 = 7
7 × 2 + 2 = 16
16 × 2 + 3 = 35
35 × 2 + 4 = $\boxed{74}$

**10.** (2) Suppose the present age of L = 7$x$ years
Present age of N = 5$x$ years
According to question
$5x + 7 = 32$
$\Rightarrow 5x = 32 - 7 = 25$
$\therefore x = \frac{25}{5} = 5$
Present age of L = 7$x$ years
= 7 × 5 = 35 years

**11.** (3) Only child of Chetan's grandmother (paternal) means father of Chetan. Therefore, Chetan is the brother of that

girl as daughter of Chetan's father would be sister of Chetan.

**12.** (3) There is only one 'L' in the given word. Therefore, the word WALLER cannot be formed.

N I G H [T] W [A L K E R]

⇒ TALKER

N [I] G H [T] W A [L] K [E R] ⇒ TAILER

[N I] G H T [W] A L K [E R]

⇒ WINER

**13.** (1)

S P I C E Y
–4 –4
E L O U A Y

P O N D E R
–4 –4
J K L N A Z

Therefore,

H O U S E D
–4 –4
Q K D Z A O

**14.** (4)

| × ⇒ + | ÷ ⇒ – |
|---|---|
| + ⇒ ÷ | – ⇒ × |

14 × 12 – 16 ÷ 18 = ?

⇒ ? = 14 + 12 × 16 – 18

⇒ ? = 14 + 192 –18

⇒ ? = 206 – 18 = [188]

**15.** (2) 18 × 12 = 206

⇒ 18 × 12 – 10 = 206

⇒ 216 – 10 = 206

19 × 22 = 408

⇒ 19 × 22 – 10 = 408

⇒ 418 – 10 = 408

Therefore,

23 × 36 = ?

⇒ ? = 23 × 36 – 10

⇒ ? = 828 – 10 = [818]

**16.** (2) First Column

$2 \times 7 + (5)^2$

⇒ 14 + 25 = 39

Second Column

$4 \times 2 + (3)^2$

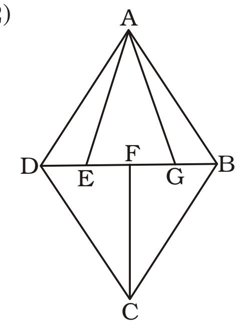
⇒ 8 + 9 = 17

Third Column

$1 \times 6 + (5)^2$

⇒ 6 + 25 = [31]

**17.** (2)




The triangles are :

Δ ADE; Δ AEG; Δ AGB; Δ ADG; Δ AEB; Δ ADB; Δ CFD; Δ CFB; Δ CBD;

Thus, there are 9 triangles in the given figure.

**18.** (4) First Premise is Particular Affirmative (I-type).

Second Premise is Universal Affirmative (A-type).

Third Premise is Universal Negative (E-type).

Some cups are plates.

↔

No plate is spoon.

I + E ⇒ O–type of Conclusion "Some cups are not spoons". This is the Conclusion I.

No plate is spoon.

↔

All spoons are blue.

E + A ⇒ $O_1$–type of Conclusion

"Some blue are not plates."

This is the Conclusion IV.

**19.** (2) The symbols β, α, γ and δ are on the faces adjacent to θ. Therefore, ψ lies opposite θ.

The symbols β, θ, δ and ψ are on the faces adjacent to α.

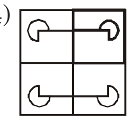
Therefore, γ lies opposite α.

Now, β lies opposite δ.

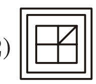
θ cannot be on the faces adjacent to ψ. Therefore, Options (1), (3) and (4) can be eliminated.

**20.** (4) The huts that are covered and muddy can be represented by the region common to all the three geometrical figures. Such region is marked '19'.

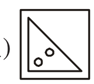
**21.** (4)



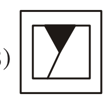
**22.** (2)



**23.** (1)



**24.** (3)



**25.** (2) T ⇒ 03, 10, 22, 34, 41

A ⇒ 00, 12, 24, 31, 43

K ⇒ 58, 65, 77, 89, 96

E ⇒ 56, 68, 75, 87, 99

| Option | T | A | K | E |
|---|---|---|---|---|
| (1) | 10 | ~~32~~ | ~~66~~ | 56 |
| (2) | 41 | 00 | 89 | 75 |
| (3) | 03 | 43 | ~~78~~ | 99 |
| (4) | 22 | ~~13~~ | ~~97~~ | 87 |

**26.** (4) Perfect Competition is a form of market in which there are very large number of buyers and sellers of a homogeneous product. Price is determined by the market forces of the supply and demand and not by firms. All firms in that market act as price-takers — i.e., they can sell as much as they like at the going market price, and nothing at any higher price. This is usually observed in markets for agricultural commodities like jute, cotton, wheat, etc.

**27.** (4) In economics, the Lorenz curve is a graphical representation of the distribution of income or of wealth. The graph plots percentiles of the population according to income or wealth on the horizontal axis. It was developed by Max O. Lorenz in 1905 for representing inequality of the wealth distribution.

**28.** (4) Article 18 under Part III of Indian constitution deals with abolition of titles. It is a fundamental right. It prevents the state from confirming any title except military and academic distinction. Article 18 prohibits the Indian citizens from receiving titles from any foreign state.

**29.** (3) Article 360 deals with provisions regarding financial emergency. It states that if the President is satisfied that there is an economic situation in which the financial stability or credit of India is threatened, he or she can declare financial emergency. Such an emergency must be approved by the Parliament within two months.

**30.** (4) The Poona Pact refers to an agreement between Dr. Babasaheb Ambedkar and Mahatma Gandhi signed on 24 September, 1932 at Yerwada Central Jail in Pune, Maharashtra. It was signed to annul Macdonald Award giving separate electorate to Dalits for electing members of state legislative assemblies in British India.

**31.** (3) Sati system (the immolation of a Hindu widow on the funeral pyre of her deceased husband) was formally banned in all jurisdictions of British India by Lord William Bentinck on 4 December, 1829. It was done so under the Bengal Sati Regulation that described the practice of Sati as revolting to the feelings of human nature.

**32.** (4) Greenhouse gases are those that absorb and emit infrared radiation in the wavelength range emitted by Earth. The primary greenhouse gases in Earth's atmosphere are: Water vapor ($H_2O$), Carbon dioxide ($CO_2$), Methane ($CH_4$), Nitrous oxide ($N_2O$), Ozone ($O_3$) and Chlorofluorocarbons (CFCs).

**33.** (2) Tropical Deciduous Forests are the most widespread forests out of all the types of forests in India. Also, called as Monsoon Forests. They are found in the regions having rainfall between 70-200cm. They are found in Madhya Pradesh, Uttar Pradesh, Bihar, Chhattisgarh, Orissa and parts of Maharashtra.

**34.** (2) Universal donor is a person who is type O in the ABO blood group system and negative for RhD blood group antigen and can donate blood to all recipients. O- blood type doesn't have antigen for A or B and Rh antigen on the surface of its RBCs. Because of the absence of Rh factor, O- blood type can be given to patients of either Rh type.

**35.** (2) The human brain is divided into three parts :

- The brainstem which has the pons, the midbrain, and the medulla oblongata.
- The cerebellum which forms the hindbrain along with the brainstem and is located below the cerebrum.
- The cerebrum which is the largest section of the brain, is divided into two hemispheres (the left and the right) each of which has four lobes: the frontal, the temporal, the parietal, and the occipital.

**36.** (1) Epinephrine, also known as adrenaline, is a hormone. It is normally produced by both the adrenal glands and certain neurons. It plays an important role in the fight-or-flight response by increasing blood flow to muscles, output of the heart, pupil dilation, and blood sugar.

**37.** (2) Supercooling is the process of chilling a liquid below its freezing point, without it becoming solid. A good example of this phenomenon is found in meteorology: clouds in high altitude are an accumulation of supercooled droplets of water below their freezing point. Supercooling was discovered in 1724 by Fahrenheit.

**38.** (1) The phenomenon of bending of light as it passes from one medium to another is known as the refraction of light. Refraction is the change in direction of a wave due to a change in its medium. It is essentially a surface phenomenon. This is most commonly observed when a wave passes from one medium to another at any angle other than 0° from the normal.

**39.** (1) An input device is any hardware device that sends data to a computer, allowing user to interact with and control the computer. MICR, OMR and Barcode Reader are examples of input devices. A plotter is a computer hardware device much like a printer that is used for printing vector graphics. It is an output device.

**40.** (1) Phenol is also known as carbolic acid. It is an aromatic organic compound with the molecular formula $C_6H_5OH$. The molecule consists of a phenyl group ($–C_6H_5$) bonded to a hydroxyl group (–OH). It is primarily used to synthesize plastics and related materials.

**41.** (2) J.J. Thomson is credited with the discovery and identification of the electron. Thomson, in 1897, was the first to suggest that one of the fundamental units was more than 1,000 times smaller than an atom, suggesting the sub-

atomic particle now known as the electron. He discovered this through his explorations on the properties of cathode rays. He won the Nobel Prize in 1906 for this discovery.

**42.** (2) Medha Patkaris the founder member of Narmada Bachao Andolan (NBA) in three states: Madhya Pradesh, Maharashtra and Gujarat. NBA has been engaged in a struggle for justice for the people affected by the dam projects related to the Sardar Sarovar dams project.

**43.** (3) Under the new UDAN scheme, people in tier 2 and tier 3 cities can fly at just Rs. 2500 per hour. The fare for regional domestic flights will be capped at Rs. 2500 per hour of flight for a fixed wing aircraft. For journey on a helicopter, the fare has been capped at Rs. 2500 for every 30 minutes, i.e. Rs. 5000 per hour.

**44.** (2) Like many inventions, that of radar is difficult to ascribe to an individual. Robert Watson-Watt is given the credit for inventing the radar. However, Albert H. Taylor and Leo C. Young at the U.S. Naval Aircraft Radio Laboratory also contributed in the development of radar during 1922-1937. They developed a practical shipboard radar, known as CXAM radar, in 1937.

**45.** (3) David Warneris an Australian cricketer and the current vice-captain of the Australian cricket team. An explosive left-handed opening batsman, Warner is the first Australian cricketer in 132 years to be selected for a national team in any format without experience in first-class cricket.

**46.** (2) Ikebana is the Japanese art of flower arrangement. Also known as kado, it developed from the Buddhist ritual of offering flowers to the spirits of the dead. It is a disciplined art form in which the arrangement is a living thing where nature and humanity are brought together.

**47.** (3) Vishwa Mohan Bhatt was awarded the 2017 Padma Bhushan in the category of Art-Music. He is a Hindustani classical music instrumentalist who plays the Mohan Veena (slide guitar). Bhatt is best known for his Grammy award winning album A Meeting by the River with Ry Cooder released on Water Lily Acoustics label.

**48.** (3) An Unsuitable Boy is an autobiographical book written by Indian film director Karan Johar. The book was first published on 9 January, 2017. In this book, Johar has narrated different events of his life starting from his childhood and details of his illustrious movie-making voyage in the film industry.

**49.** (4) IORA is an international organisation consisting of 21 coastal states bordering the Indian Ocean. China is not a member of this grouping. Its members are : Australia, Bangladesh, Comoros, India, Indonesia, Iran, Kenya, Madagascar, Malaysia, Mauritius, Mozambique, Oman, Seychelles, Singapore, South Africa, Sri Lanka, Tanzania, Thailand, UAE, Yemen and Somalia.

**50.** (2) China, in January 2017, launched its longest bullet train "Shangri-La of the World" from Kunming, capital of south-west China's Yunnan Province to Beijing, expanding its high-speed train network to about 20,000 km connecting almost all provinces. A longer rail line stretching north to south is the 2,298 km Beijing-Guangzhou line, put into operation in 2012.

**51.** (3) Prime numbers between 60 and 80 $\Rightarrow$ 61, 67, 71, 73 and 79

$\therefore$ Required sum

$= 61 + 67 + 71 + 73 + 79 = 351$

**52.** (2) $\because$ A types 36 pages in 9 hours.

$\therefore$ Number of pages typed by A in 1 hour = 4

Similarly, number of pages typed by B in 1 hour = 8

Time taken by A in typing 60 pages $= \frac{60}{4} = 15$ hours

Number of pages typed by A and B together in 1 hour

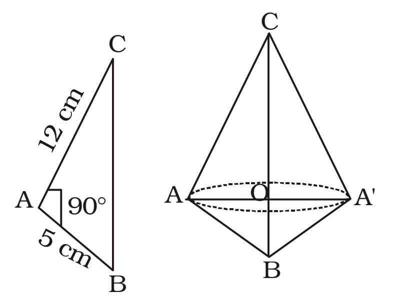
$= 4 + 8 = 12$

$\therefore$ Time taken in typing last 60 pages

$= \frac{60}{12} = 5$ hours

$\therefore$ Total time = (15 + 5) hours = 20 hours

**53.** (2)




When a right angled triangle is rotated about its hypotenuse, double cone is formed.

Slant height of cone ACA' = 12 cm.

Slant height of cone ABA' = 5 cm.

In $\Delta$ ABC,

$\angle A = 90°$

$\therefore BC = \sqrt{AB^2 + AC^2}$

$= \sqrt{5^2 + 12^2}$

$= \sqrt{25 + 144} = \sqrt{169}$

= 13 cm.

Area of $\Delta$ ABC

$= \frac{1}{2} \times AB \times AC = \frac{1}{2} \times 5 \times 12$

= 30 sq. cm.

Again, area of $\Delta$ ABC

$= \frac{1}{2} \times BC \times AO$, where $AO \perp AB$

$\Rightarrow \frac{1}{2} \times 13 \times AO = 30$

$\Rightarrow AO = \frac{60}{13}$ cm = radius of base = r

$\therefore$ Volume of double cone

= Volume of cone ACA' + volume of cone ABA'

$= \frac{1}{3}\pi r^2 \times CO \times \frac{1}{3}\pi r^2 BO$

$= \frac{1}{3}\pi r^2 (CO + BO)$

$= \frac{1}{3}\pi r^2 \times BC$

$= \left(\frac{1}{3} \times \frac{22}{7} \times \frac{60}{13} \times \frac{60}{13} \times 13\right)$ cu.cm.

= 290 cu.cm.

**54.** (1) S.P. of trolley bag

$= \text{Rs.} \left(\frac{1360 \times 85}{100}\right) = \text{Rs. } 1156$

Profit per cent = 15.6%

$\therefore$ C.P. of bag

$= \frac{110 \times 1156}{115.6} = \text{Rs. } 1000$

**55.** (3) Weight of original diamond

$= 3x + 5x + 7x = 15x$ units

Its value $\propto (15x)^2$

$= 225kx^2$

where $k$ = constant of proportionality

$\therefore$ Total value of all pieces

$= k\,(9x^2 + 25x^2 + 49x^2)$

$= \text{Rs. } 83lx^2$

Loss $= 225kx^2 - 83kx^2$

$= \text{Rs. } 142kx^2$

$\therefore 142kx^2 = 42600$

$\Rightarrow kx^2 = \frac{42600}{142} = 300$

$\therefore$ Original price of diamond

$= 225kx^2 = \text{Rs. } (225 \times 300)$

= Rs. 67500

**56.** (2) Weight of the 50th student

$= (100 \times 32 - 49 \times 30 - 50 \times 34)$ kg.

$= (3200 - 1470 - 1700)$ kg.

= 30 kg.

**57.** (4) C.P. of 90 pens

$= \frac{100 \times 80}{80} = \text{Rs. } 100$

$\therefore$ To gain 20%,

Required S.P. = Rs. 120

**58.** (4) Raman's initial income

= Rs. 100

Expenditure = Rs. 80

Saving = Rs. 20

Again, new income of Raman

= Rs. 125

$\text{Expenditure} = \text{Rs.} \left(\frac{80 \times 110}{100}\right)$

= Rs. 88

Savings = Rs. (125 – 88)

= Rs. 37

$\therefore$ Percentage increase in savings

$= \left(\frac{37 - 20}{20}\right) \times 100$

$= 17 \times 5 = 85\%$

**59.** (1) Let each distance be $x$ km.

Average speed

$= \frac{\text{Total distance}}{\text{Time taken}}$

$= \frac{4x}{\frac{x}{60} + \frac{x}{30} + \frac{x}{15} + \frac{x}{7.5}}$

$= \frac{4x}{\frac{x}{60} + \frac{x}{30} + \frac{x}{15} + \frac{10x}{75}}$

$= \frac{4x}{\frac{x}{60} + \frac{x}{30} + \frac{3x}{15}} = \frac{4x}{\frac{x + 2x + 12x}{60}}$

$= \frac{4x \times 60}{15x} = 16$ kmph

**60.** (3) Let the principal be Rs. $x$.

$\text{S.I.} = \frac{\text{Principal} \times \text{Time} \times \text{Rate}}{100}$

According to the question,

$\frac{x \times 3 \times 3}{100} + \frac{x \times 5 \times 4}{100} + \frac{x \times 7 \times 6}{100}$

= 2059

$\Rightarrow \frac{9x}{100} + \frac{20x}{100} + \frac{42x}{100} = 2059$

$\Rightarrow \frac{71x}{100} = 2059$

$\Rightarrow x = \frac{2059 \times 100}{71} = \text{Rs. } 2900$

**61.** (2) $x + y = 5 = 2 + 3$ or $3 + 2$

$x^3 + y^3 = 35 = 8 + 27$

$\Rightarrow x^3 + y^3 = 2^3 + 3^3$

$\Rightarrow x = 2$ or $3$, $y = 3$ or $2$

$\therefore x - y = 3 - 2 = 1$

**62.** (4) $x = \sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}}$

On squaring both sides,

$x^2 = \frac{2+\sqrt{3}}{2-\sqrt{3}} = \frac{2+\sqrt{3}}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}}$

$\Rightarrow x^2 = \frac{(2+\sqrt{3})^2}{4-3}$

$\Rightarrow x^2 = 4 + 3 + 4\sqrt{3}$

$\therefore x = \sqrt{4 + 3 + 2 \times 2 \times \sqrt{3}}$

$= \sqrt{(2+\sqrt{3})^2} = 2 + \sqrt{3}$

$\therefore x^2 + x - 9$

$= 7 + 4\sqrt{3} + 2 + \sqrt{3} - 9$

$= 5\sqrt{3}$

**63.** (3) $\because x + y + z = 0$

$\therefore x^3 + y^3 + z^3 = 3xyz$

$\therefore$ Expression

$= \frac{x^2}{3z} + \frac{y^3}{3xz} + \frac{z^2}{3x}$

$= \frac{x^3 + y^3 + z^3}{3xz} = \frac{3xyz}{3xz} = y$

**64.** (*) $x - \frac{1}{x} = 1$

$\Rightarrow x^2 - 1 = x$

Again, $\left(x + \frac{1}{x}\right)^2 = \left(x - \frac{1}{x}\right)^2 + 4$

= 1 + 4 = 5

$\therefore x + \frac{1}{x} = \pm\sqrt{5}$

If the expression

$= \left(\frac{1}{x-1} - \frac{1}{x+1} + \frac{1}{x^2+1} - \frac{1}{x^2-1}\right)$

$= \left(\frac{x+1-x+1}{(x-1)(x+1)} + \frac{1}{x^2+1} - \frac{1}{x^2-1}\right)$

$= \left(\frac{2}{x^2-1} + \frac{1}{x^2+1} - \frac{1}{x^2-1}\right)$

$= \left(\frac{1}{x^2-1} + \frac{1}{x^2+1}\right)$

$= \left(\frac{x^2+1+x^2-1}{(x^2-1)(x^2+1)}\right)$

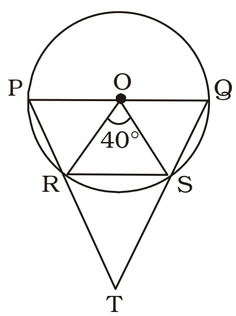
$= \left(\frac{2x^2}{(x^2-1)(x^2+1)}\right)$

$= \left(\frac{2x^2}{x(x^2+1)}\right)$

$[\because x^2 - 1 = x]$

$= \left(\frac{2x}{x\left(x+\frac{1}{x}\right)}\right) = \frac{2}{\pm\sqrt{5}}$

**65.** (3)




$\angle ROS = 40°$
OR = OS
$\therefore \angle ORS = \angle OSR$

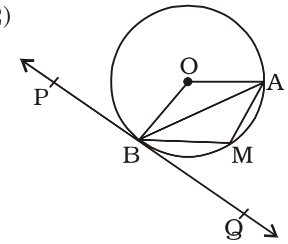
$= \frac{1}{2}(180° - 40°) = 70°$

PQ || RS
$\therefore \angle POR = \angle ORS = 70°$
$\angle SOQ = \angle OSR = 70°$
OP = OR = radius
$\therefore \angle OPR = \angle ORP$

$= \frac{1}{2}(180° - 70°) = 55°$

OQ = OS = radius
$\therefore \angle OQS = \angle OSQ = 55°$
$\therefore \angle QPT = \angle SRT = 55°$
$\angle PQT = \angle RST = 55°$
$\therefore \angle PTQ = 180° - 55° - 55°$
$= 180° - 110° = 70°$

**66.** (2)

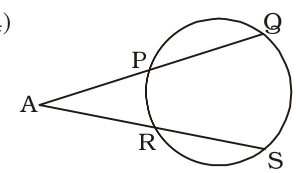



$\angle AMB = 130°$
$\therefore$ Reflex $\angle$ BOA = 2 × 130°
= 260°
In $\Delta$ OBA,
$\therefore \angle BOA = 360° - 260° = 100°$
OA = OB

$\therefore \angle OBA = \angle OAB = \frac{80°}{2} = 40°$

OB $\perp$ PQ
$\therefore \angle OBQ = 90°$
$\therefore \angle ABQ = 90° - 40° = 50°$

**67.** (4)

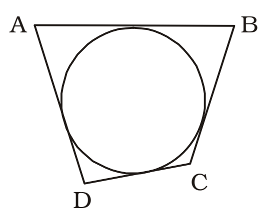



Clearly,
AO × AP = AS × AR
$\Rightarrow$ (AP + PQ) × AP
= (AR + RS) × AR
$\Rightarrow$ (3 + PQ) × 3 = (6 + 9) × 6

$\Rightarrow 3 + PQ = \frac{15 \times 6}{3} = 30$

$\Rightarrow$ PQ = 30 – 3 = 27 cm

**68.** (3)




The tangents drawn from a point outside to the circle are equal.
$\therefore$ AB + CD = BC + AD
$\Rightarrow 2x + 3 + x + 6$
$= 3x - 1 + x + 4$
$\Rightarrow 3x + 9 = 4x + 3$
$\Rightarrow 4x - 3x = 9 - 3 \Rightarrow x = 6$

**69.** (3) $\text{cosec}^2\theta = \frac{625}{576}$

$\Rightarrow \text{cosec}\theta = \sqrt{\frac{625}{576}} = \frac{25}{24}$

$\therefore \sin\theta = \frac{24}{25}$

$\therefore \cos\theta = \sqrt{1 - \sin^2\theta}$

$= \sqrt{1 - \frac{576}{625}} = \sqrt{\frac{625-576}{625}}$

$= \sqrt{\frac{49}{625}} = \frac{7}{25}$

$\therefore \frac{\sin\theta - \cos\theta}{\sin\theta + \cos\theta}$

$= \frac{\frac{24}{25} - \frac{7}{25}}{\frac{24}{25} + \frac{7}{25}} = \frac{\frac{17}{25}}{\frac{31}{25}}$

$= \frac{17}{25} \times \frac{25}{31} = \frac{17}{31}$

**70.** (4) Expression

$= \frac{3}{2}\frac{\cos 39}{\sin 51} - \sqrt{\sin^2 39 + \sin^2 51}$

$= \frac{3}{2} \cdot \frac{\cos(90° - 51)}{\sin 51} - \sqrt{\sin^2 39 + \sin^2(90° - 39)}$

$= \frac{3}{2} \times \frac{\sin 51}{\sin 51} - \sqrt{\sin^2 39 + \cos^2 39}$

$= \frac{3}{2} \mp 1 = \frac{1}{2}$ or $\frac{5}{2}$

**71.** (3)

$\cot A = \frac{\sin B}{1 - \cos B} = \frac{2\sin\frac{B}{2} . \cos\frac{B}{2}}{2\sin^2\frac{B}{2}}$

$\Rightarrow \cot A = \frac{\cos\frac{B}{2}}{\sin\frac{B}{2}} = \cot\frac{B}{2}$

$\Rightarrow A = \frac{B}{2} \Rightarrow 2A = B$

$\therefore \cot 2A = \cot B$

**72.** (4) For company-1 in 2015,

$\frac{\text{Production}}{\text{Sales}} = 1.3$

$\Rightarrow$ Production = 1.3 × 50000
= 65000

**73.** (2) For company-2 in 2012,

$\frac{\text{Production}}{\text{Sales}} = 0.75$

$\Rightarrow \frac{30000}{\text{Sales}} = 0.75$

$\Rightarrow \text{Sales} = \frac{30000}{0.75} = 40000$

For company-2 in 2013,

$\frac{\text{Production}}{40000} = 0.4$

$\Rightarrow$ Production = 0.4 × 40000 = 16000

**74.** (1) Sales of company-1 in 2014

$= \frac{18000}{0.9} = 20000$

$\therefore$ Sales–Production
= 20000 – 18000 = 2000
For company-2 in 2012,
Sales–Production
= 0.25 × 15000 = 3750
$\therefore$ Required ratio
= 2000 : 3750
= 8 : 15

**75.** (4) Average production of company-1

$= \frac{1}{6}(0.6 + 0.9 + 0.7 + 0.9 + 1.3 + 1.3) \times 20000$

$= \frac{1}{6} \times 5.7 \times 20000 = 19000$

Average production of company-2

$= \frac{1}{6}(0.8 + 0.75 + 0.4 + 1.3 + 1.45 + 1.1) \times 10000$

$= \frac{1}{6} \times 5.8 \times 10000$

$= \frac{58000}{6} = \frac{29000}{3}$

$\therefore$ Required difference

$= 19000 - \frac{29000}{3}$

$= \frac{57000 - 29000}{3}$

$= \frac{28000}{3} = 9333.33$

**76.** (3) It is not proper to use 'the' here. Hence, (but) he went there by car ..... should be used.
**Look at the sentences :**
He went by car.
Are you going in the car ?

**77.** (2) **Ascend the throne** = to become queen or king.
**Look at the sentence :**
At Stephen's death, Henry ascended the throne as King Henry II.
Hence, the throne should be used. Preposition 'to' is not needful.

**78.** (4) **Get through** = pass; be successful in.

**79.** (2) **Forgive (Verb)** = to stop being angry with someone for something.
Pardon is often used in polite expressions.

**80.** (3) **Ebullient (Adjective)** = cheerful and full of energy; enthusiastic; high-spirited
**Look at the sentence :**
She sounded ebullient and happy.

**81.** (1) **Truculent (Adjective)** = defiant; aggressive; ferocious; quarrel some.
**Look at the sentence :**
He was truculent and difficult to deal with.

**82.** (3) **Niggardly (Adjective)** = mean; miserly; parsimonious; ungenerous with money, time etc.
**Generous (Adjective)** = lavish; showing a readiness to give more of something especially money etc.
**Look at the sentences :**
He accused the government of being unbelievably niggardly.
He was very generous with his time and always had a willingness to help others.

**83.** (4) **Dissident (Noun/Adjective)** = A person who opposes official policy; disagreeing.
**Orthodox (Adjective)** = following the traditional rules or beliefs.
**Look at the sentences :**
Apparently the dispute in the dissidents' camp is unresolved to this day.
We would prefer a more orthodox approach to the problem.
We should try our best to pacify the dissident group.

**84.** (4) **Bear the palm** = win; to be the winner; take the prize.
**Look at the sentence :**
Rita bore the palm in the declamation contest.

**85.** (2) **To give the devil his due** = said when you admit that someone you donot like or admire does have some good qualities.
**Look at the sentence :**
I don't like the man but-give the devil his due-he works incredibly hard.

**86.** (*) Here, No sooner did the advertisement regarding the launch of new smart phone appear .... should be used.

**87.** (2) **Adapt** = to change something to suit different conditions.
The play had been adapted **for** (= changed to make it suitable for) children.
Hence, adapted for .... should be used here.

**90.** (2) **Occurrence (Noun)** = event; incident.

**91.** (1) **Receding** = going back; diminishing.

**94.** (1) Subject + was + $V_3$ + Gerund + Object + by + Object.

**95.** (3) It is an imperative sentence.

**100.** (2) **Inflict (Verb)** = impose something unwelcome on; force; to make somebody/something suffer something unpleasant.
**Look at the sentence :**
They inflicted a humiliating defeat on him.

❑❑❑

SET 23

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 17.08.2017 (Shift-I)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Father : Parent :: Sister : ?
(1) Other
(2) Brother
(3) Daughter
(4) Sibling

**2.** Select the related letters from the given alternatives :
WTQ : DGJ :: NKH : ?
(1) MPS (2) LOR
(3) NQT (4) ORV

**3.** Select the related number from the given alternatives :
60 : 15 : : 100 : ?
(1) 45 (2) 35
(3) 5 (4) 25

**4.** Select the odd word from the given alternatives :
(1) Chair (2) Sofa
(3) Couch (4) Television

**5.** Select the odd letters from the given alternatives :
(1) XVT (2) NPR
(3) LJH (4) FDB

**6.** Select the odd number from the given alternatives :
(1) 1 (2) –2
(3) –(–3) (4) 5

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
bat, thin, reply, length, ?
(1) terror (2) display
(3) dome (4) scolding

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
AbC, dEfG, hIjKl, MnOpQr, ?
(1) StUvWxY
(2) StUvWx
(3) StUvWxYZ
(4) sTuVwXy

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :

$1, 0.125, \frac{1}{27}, \frac{1}{64}, ?, \frac{1}{216}$

(1) 0.025 (2) $\frac{1}{8}$
(3) $\frac{1}{128}$ (4) 0.008

**10.** Hansh's birthday is on Monday 5th June. On what day of the week will be Tushar's birthday in the same year if Tushar was born on 11th December?
(1) Sunday
(2) Wednesday
(3) Monday
(4) Tuesday

**11.** The weights of 4 boxes are 40, 30, 50 and 20 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 140 (2) 130
(3) 90 (4) 100

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**TOKENISM**
(1) NAMES (2) EMITS
(3) STONE (4) NOISE

**13.** If SQUALOR is coded as USWCNQT, then how will WHY be coded as?
(1) CZR (2) SGY
(3) YJA (4) YPT

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
9 + 3 – 72 × 6 ÷ 3 = ?
(1) 46 (2) 21
(3) 9 (4) 36

**15.** If 19 # 13 = 3; 25 # 3 = 11; 36 # 10 = 13; then what is the value of 7 # 3 = ?
(1) 21 (2) 2
(3) 26 (4) 39

**16.** Select the missing number from the given responses

| 10 | 4 | 2 | 12 |
|---|---|---|---|
| 7 | ? | 3 | 15 |
| 8 | 5 | 1 | 3 |

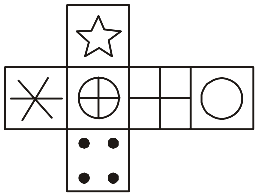
(1) 9 (2) 1
(3) 25 (4) 2

**17.** A and B start running from the same point. A runs 3 km West, then turns South and runs 5 km, then turns to her right and runs 7 km. B runs 1 km South then turns to her right and runs 10 km. Where is B with respect to A now?
(1) 4 km. South
(2) 4 km. North
(3) 6 km. North
(4) 6 km.` South

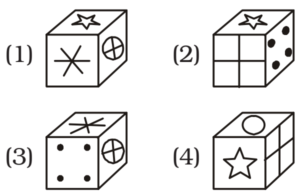
**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.
**Statement :**
Should speed breakers be banned?
**Arguments :**
I. Yes, data shows that number of accidents increase after putting the speed breakers.
II. No, it teaches fast drivers a lesson.
(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

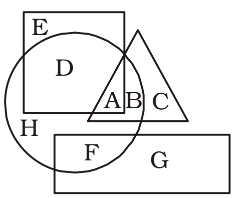
**Question Figure :**



**Answer Figures :**



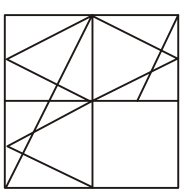
**20.** In the following figure, square represents Dancers, triangle represents Geologists, circle represents Architects and rectangle represents Mothers. Which set of letters represents Architects who are also Geologists?



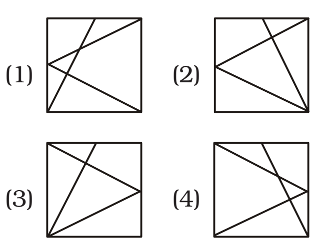

(1) A, B (2) E, D
(3) D, H, F (4) G, C

**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

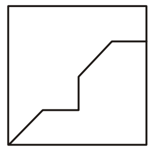


**Answer Figures :**

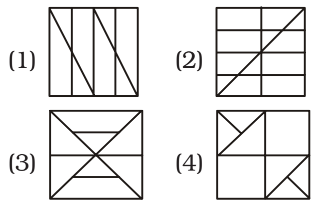


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

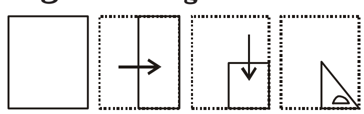


**Answer Figures :**

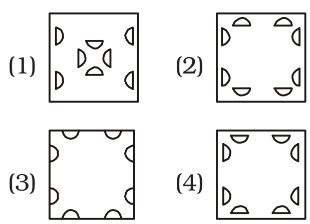


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

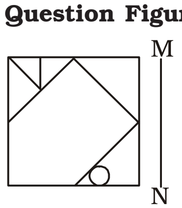


**Answer Figures :**

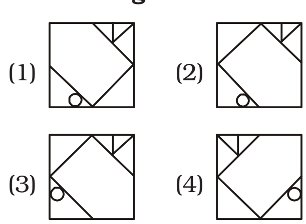


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 33, 43 etc and 'Z' can be represeted by 65, 59 etc. Similarly, you have to identify the set for the word **'SIZE'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | E | M | E | J | H |
| 1 | I | H | F | G | A |
| 2 | E | H | D | A | I |
| 3 | C | B | M | K | L |
| 4 | F | L | G | K | D |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | U | V | U | V | Z |
| 6 | Z | O | X | S | P |
| 7 | P | P | R | V | N |
| 8 | Q | S | N | S | W |
| 9 | S | X | T | N | S |

(1) 34, 32, 98, 77
(2) 42, 00, 99, 77
(3) 03, 44, 67, 77
(4) 95, 24, 59, 20

## GENERAL AWARENESS

**26.** In a centrally planned economy, the ________ plans all the important activities in the economy.
(1) Industrialists
(2) Citizens
(3) Government
(4) Judiciary

**27.** _________ says that if we keep increasing the employment of an input, with other inputs fixed, eventually a point will be reached after which the resulting addition to output (i.e., marginal product of that input) will start falling.
(1) Law of diminishing marginal product
(2) Law of variable proportions
(3) The Short Run
(4) The Long Run

**28.** ____________ means that the Supreme Court will reconsider the case and the legal issues involved in it.
(1) Original Jurisdiction
(2) Writ Jurisdiction
(3) Appellate Jurisdiction
(4) Advisory Jurisdiction

**29.** Which amendment of the Constitution of India increased the age of retirement of High Court judges from 60 to 62 years?
(1) 10th (2) 12th
(3) 15 th (4) 245th

**30.** During their rule the British persuaded or forced cultivators in Madras to grow _________.
(1) Jute
(2) Tea
(3) Sugarcane
(4) Rice

**31.** The queen with the title Didda ruled over which part of India between 980-1003?
(1) Avadh (2) Kashmir
(3) Sindh (4) Bengal

**32.** In the north-west, India shares its land boundaries with which country?
(1) Sri Lanka
(2) Myanmar
(3) Bangladesh
(4) Pakistan

**33.** The part of the Himalayas lying between Satluj and Kali rivers is known as
(1) Punjab Himalaya
(2) Nepal Himalayas
(3) Kumaon Himalayas
(4) Assam Himalayas

**34.** Potato, tomato and brinjal are three different species but all belong to which genus?
(1) Solanum (2) Panthera
(3) Felis (4) Tigris

**35.** The first formed primary xylem elements are called _________.
(1) Metaxylem
(2) Protoxylem
(3) Xylem fibres
(4) Xylem parenchyma

**36.** Nereis, Pheretima (Earthworm) and Hirudinaria (blood sucking leech) are examples of which Phylum?
(1) Coelenterata
(2) Aschelminthes
(3) Annelida
(4) Arthropoda

**37.** In humans, the sound is produced by the _______.
(1) oesophagus
(2) larynx
(3) medulla
(4) epiglottis

**38.** The vocal cords in men are about ______ long.
(1) 10mm (2) 20mm
(3) 30mm (4) 40mm

**39.** The ______ uses an addressing scheme known as URL to indicate the location of files on the web.
(1) JavaScript
(2) World Wide Web
(3) SQL
(4) String

**40.** Most liquids that conduct electricity are solutions of acids, bases and _____.
(1) Copper (2) Aluminium
(3) Salts (4) Iron

**41.** Which base is present in milk of magnesia?
(1) Magnesium hydroxide
(2) Ammonium hydroxide
(3) Sodium hydroxide
(4) Calcium hydroxide

**42.** __________ is the process of restoring a forest that once existed but was removed at some point of time in the past.
(1) Deforestation
(2) Reforestation
(3) Greenhouse
(4) Jhum cultivation

**43.** ___________ scheme launched by the Central Government to eliminate open defecation by constructing toilets for households, communities.
(1) Swachh Bharat Abhiyan
(2) Gram Uday Se Bharat Uday Abhiyan
(3) Stand up India scheme
(4) National RU URBAN Mission

**44.** Who discovered Sodium?
(1) Humphry Davy
(2) William Henry Fox
(3) J.J. Thomson
(4) Karl Benz

**45.** Who was the 2016 Men's Kabaddi World Cup Runner-Up?
(1) Thailand (2) Iran
(3) Argentina (4) Pakistan

**46.** Jama Masjid of Delhi was built in which century?
(1) 15th (2) 16th
(3) 17th (4) 18th

**47.** Which of the following won The Man Booker Prize 2016?
(1) The Sellout
(2) A Brief History of Seven Killings
(3) The Narrow Road to the Deep North
(4) The Luminaries

**48.** Which of the statements given below are correct?
1. The author of the novel 'Gilead' is Don Winslow.
2. The author of the novel 'Wolf Hall' is Stephen Dobyns.
3. The author of the novel 'To Kill a Mockingbird' is Harper Lee.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** What was United Kingdom's rank in 2016 Human Development Index published by the United Nations Development Programme?
(1) 4 (2) 16
(3) 64 (4) 256

**50.** Which railway station is used for immigration and customs of passengers who travel on the Thar Express between Pakistan and India?
(1) Jalal Marri
(2) Zero Point
(3) Lal Pir
(4) Gujar Garhi

## QUANTITATIVE APTITUDE

**51.** Select the correct option : Convert binary 1101111 to decimal.
(1) 111 (2) 101
(3) 110 (4) 100

**52.** A can finish a work in 18 days and B in 36 days. If they work on it together for 9 days, then what percent of work is left?
(1) 33.3 (2) 20
(3) 75 (4) 25

**53.** The diagonal of a square is 12 cm. What is the length (in cm.) of its side?
(1) $6\sqrt{2}$ (2) $12\sqrt{2}$
(3) 6 (4) 9

**54.** If on a sale there is 30% discount on the marked price of Rs. 2500, but the sale is done at Rs. 1400 only. What additional discount (in %) did the customer get?
(1) 10 (2) 20
(3) 15 (4) 25

**55.** What is the third proportional to 10 and 25?
(1) 125 (2) 150
(3) 62.5 (4) 225

**56.** In a class of 50 students there are 27 boys. The average weight of these boys is 72 kg and average weight of the full class is 55.44 kg. What is the average weight (in kg.) of the girls of the class?
(1) 42 (2) 48
(3) 30 (4) 36

**57.** If a saree is sold for Rs. 1900 the seller will face 5% loss. At what price (in Rs.) should he sell the saree to gain 15% profit?
(1) 2200 (2) 2400
(3) 2500 (4) 2300

**58.** Pranita got 30 marks more in Math than what she got in Science. Her Math marks are 60% of the sum of her Math and Science marks. What are her Science marks?
(1) 90 (2) 150
(3) 120 (4) 60

**59.** To travel 432 km, an Express train takes 1 hour more than Duronto. If however, the speed of the Express train is increased by 50%, it takes 2 hours less than Duronto. What is the speed (in km/hr) of Duronto train?
(1) 60 (2) 54
(3) 48 (4) 72

**60.** What is the difference (in Rs.) between the compound interests on Rs. 4000 for 1 year at 12% per annum compounded yearly and half-yearly?
(1) 14.4 (2) 12.4
(3) 10.4 (4) 16.4

**61.** If $7x - \frac{[3(2x-3)]}{2} = \frac{1}{2}$, then what is the value of $x$ ?
(1) –1 (2) 1
(3) 3 (4) –3

**62.** If $a + b = 4$ and $ab = 3$, then what is the value of $(a^3 + b^3)$ ?
(1) 21 (2) 17
(3) 28 (4) 31

**63.** The sum of a fraction and 7 times its reciprocal is $\frac{11}{2}$. What is the fraction?
(1) $\frac{7}{2}$ (2) $\frac{2}{7}$
(3) $\frac{3}{4}$ (4) $\frac{4}{3}$

**64.** The 3rd term and 9th term of an arithmetic progression are –8 and 10 respectively. What is the 16th term?
(1) 34 (2) 28
(3) 25 (4) 31

**65.** What is the reflection of the point (1, –2) in the line $y = 3$?
(1) (1, –4) (2) (1, 4)
(3) (–1, –4 ) (4) (–1, 4)

**66.** Point A (2, 1) divides segment BC in the ratio 2 : 3. The coordinates of B are (1, –3) and that of C are (4, $y$). What is the value of $y$ ?
(1) 8 (2) –7
(3) –8 (4) 7

**67.** At what point does the line $2x + 5y = -6$ cuts the $x$-axis?
(1) (3, 0) (2) (0, 3)
(3) (–3, 0) (4) (0, -3)

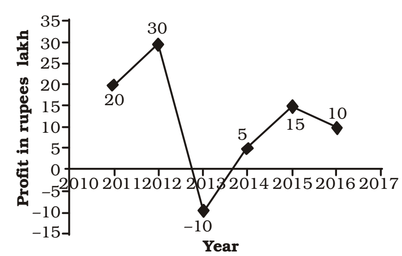
**68.** ΔABC is right angled at B. BD is an altitude. AD = 9 cm and DC = 16 cm. What is the value of BD (in cm.)?
(1) 6 (2) 18
(3) 21 (4) 12

**69.** What is the value of tan 45° + $\frac{4}{\sqrt{3}}$ sec 60°?
(1) $\frac{(\sqrt{3}+8)}{\sqrt{3}}$ (2) $\frac{(\sqrt{3}+8)}{3}$
(3) $\frac{(\sqrt{3}-8)}{\sqrt{3}}$ (4) $\frac{(\sqrt{3}-8)}{3}$

**70.** ΔDEF is right angled at E and m ∠D = 30°. What is the length (in cm.) of DE, if EF = $2\sqrt{3}$ cm.?
(1) 3 (2) 4
(3) 6 (4) 2

**71.** If $\sin\theta = \frac{20}{29}$, then what is the value of cos θ?
(1) $\frac{29}{21}$ (2) $\frac{21}{29}$
(3) $\frac{21}{20}$ (4) $\frac{20}{29}$

**Directions (72–75) :** The line graph shows annual profits in rupees lakhs of a certain company from 2011 to 2016. Study the diagram and answer the following questions.




**72.** The company reported a loss in which year?
(1) 2013 (2) 2016
(3) 2012 (4) 2014

**73.** What is the cumulative profits (in Rs. lakh) earned by the company in the given six years?
(1) 80 (2) 70
(3) 90 (4) 100

**74.** By what value profit in 2012 was more (in %) than the profit of 2011?

(1) 10 (2) 33.33
(3) 50 (4) 40

**75.** If the profits are added to the company's reserves and the reserves stood at Rs. 150 lakhs at the end of 2015, what were the reserves (in Rs. lakhs) in the beginning of 2012?
(1) 130 (2) 90
(3) 110 (4) 40

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The view of the downstream (1)/ and directly down the (2)/ bridge was awesome. (3)/No Error (4)

**77.** His name was hardly (1)/ known out (2)/ his own country. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** The fun __________ reduced significantly when mom decided to tag along.
(1) mark (2) sign
(3) quotient (4) moment

**79.** The shepherd guarded a large ________ of sheep and allowed them to move from pasture to pasture.
(1) block (2) culture
(3) shoal (4) flock

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Facsimile**
(1) Disparate (2) Replica
(3) Peculiar (4) Contrast

**81. Chauvinism**
(1) Neutral (2) Aloof
(3) Zealotry
(4) Evenhanded

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Melody**
(1) Chant
(2) Lyric
(3) Cacophony
(4) Inflection

**83. Diffident**
(1) Bashful (2) Demure
(3) Aggressive (4) Meek

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To have a finger in every pie**
(1) To Fight with everybody
(2) To be involved in a large and varied number of activities or enterprises
(3) To make fun of everybody
(4) To leave every job unfinished

**85. To make up one's mind**
(1) To be prepared for unfavourable outcomes
(2) To make a decision; decide
(3) To overcome intense grief
(4) To psyche oneself into believing that the task at hand is not impossible

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** We might **(have doing)** something to help you.
(1) having to do
(2) has done
(3) have done
(4) No Improvement

**87.** He **(to be)** positively rude.
(1) was being (2) were being
(3) being
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Distorted representation of something**
(1) Travesty (2) Solemnity
(3) Seriousness
(4) Gravity

**89. A feeling of intense longing for something**
(1) Yearning (2) Apathy
(3) Satiety
(4) Gratification

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Perverted (2) Pervirted
(3) Parverted (4) Parvirted

**91.** (1) Blandnes (2) Blandeness
(3) Blandenes (4) Blandness

**Directions (92–93) :** Each questions below consists of a set of labelled sentences/clauses. Out of the four options given, select the most logical order of the sentences/clauses to form a coherent paragraph.

**92. The burning sun**
X. our very
Y. seemed to be sucking
Z. blood out of us
(1) XZY (2) XYZ
(3) ZYX (4) YXZ

**93. I hear the sound**
X. his tool raised
Y. of the blow while I see
Z. above his head
(1) XZY (2) XYZ
(3) YXZ (4) ZYX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**The tutor always answers the students' questions.**
(1) The students' questions is always answered by the tutor.
(2) Questions answered by the tutor are by the students.
(3) The students' questions are always answered by the tutor.
(4) Questions answered by the tutor is by the students.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**Mother said, "Will you tell me what it means, Pritam?"**
(1) Mother asked Pritam if he will tell her what it meant.
(2) Mother asked Pritam that he would tell her what it meant.
(3) Mother asked Pritam if he would tell her what it meant.

(4) Mother asked Pritam that he will tell her what it meant.

**Directions (96–100) :** A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Prebiotics are the lesser-known gut-health promoters which serve as food for good bacteria inside the gut. "We found that dietary prebiotics can improve non-REM (random eye movement) sleep, as well as REM sleep after a stressful event," said Robert Thompson, a PhD researcher at University of Colorado Boulder in the U.S. Prebiotics are dietary fibres found naturally in foods like artichokes, raw garlic, leeks and onions.

When beneficial bacteria digest prebiotic fibre, they not only multiply, improving overall gut health, but they also release metabolic byproducts. Researchers fed three-week-old male rats a diet of either standard chow or chow that included prebiotics. They then monitored the rats' body temperature, gut bacteria and sleep-wake cycles — using electroencephalogram (EEG), or brain activity testing over time. Findings revealed that the rats on the prebiotic diet spent more time in non-rapid-eye-movement (NREM) sleep, which is restful and restorative, than those on the nonprebiotic diet.

**96.** What are prebiotics?
(1) Dietary fibres
(2) Bacteria
(3) Foods like artichokes
(4) Gut microbiota

**97.** What type of sleep is restorative?
(1) NREM (2) REM
(3) EEG (4) ECG

**98.** How are metabolic by-products released?
(1) When good bacteria help sleep
(2) When good bacteria digest diet ary fibres
(3) When gut becomes rich in nutrients
(4) After recovery from stress due to sleep

**99.** How can sleep–wake cycles be monitored?
(1) By testing brain power
(2) By allowing REM and NREM sleep
(3) By using EEG
(4) By recording body temperature

**100.** What is chow?
(1) Type of dietary fibre
(2) A class of nutrients
(3) Rat food
(4) Sleep enhancer

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (1) | **3.** (1) | **4.** (4) |
| **5.** (2) | **6.** (2) | **7.** (2) | **8.** (1) |
| **9.** (4) | **10.** (3) | **11.** (2) | **12.** (1) |
| **13.** (3) | **14.** (4) | **15.** (2) | **16.** (4) |
| **17.** (2) | **18.** (1) | **19.** (2) | **20.** (1) |
| **21.** (3) | **22.** (2) | **23.** (4) | **24.** (2) |
| **25.** (4) | **26.** (3) | **27.** (1) | **28.** (3) |
| **29.** (3) | **30.** (4) | **31.** (2) | **32.** (4) |
| **33.** (3) | **34.** (1) | **35.** (2) | **36.** (3) |
| **37.** (2) | **38.** (2) | **39.** (2) | **40.** (3) |
| **41.** (1) | **42.** (2) | **43.** (1) | **44.** (1) |
| **45.** (2) | **46.** (3) | **47.** (1) | **48.** (*) |
| **49.** (2) | **50.** (2) | **51.** (1) | **52.** (4) |
| **53.** (1) | **54.** (2) | **55.** (3) | **56.** (4) |
| **57.** (4) | **58.** (4) | **59.** (2) | **60.** (1) |
| **61.** (1) | **62.** (3) | **63.** (1) | **64.** (4) |
| **65.** (2) | **66.** (4) | **67.** (3) | **68.** (4) |
| **69.** (1) | **70.** (3) | **71.** (2) | **72.** (1) |
| **73.** (2) | **74.** (3) | **75.** (3) | **76.** (2) |
| **77.** (2) | **78.** (3) | **79.** (4) | **80.** (2) |
| **81.** (3) | **82.** (3) | **83.** (3) | **84.** (2) |
| **85.** (2) | **86.** (3) | **87.** (1) | **88.** (1) |
| **89.** (1) | **90.** (1) | **91.** (4) | **92.** (4) |
| **93.** (3) | **94.** (3) | **95.** (3) | **96.** (1) |
| **97.** (1) | **98.** (2) | **99.** (3) | **100.** (3) |

## EXPLANATIONS

**1.** (4) Father is parent. Similarly, sister is sibling.

**2.** (1) W T Q
↓ ↓ ↓
D G J

Pairs of opposite letters.
Similarly,
N K H
↓ ↓ ↓
M P S

**3.** (1) 60 : 15 : : 100 : 25 (÷4, ÷4)

**4.** (4) Except 'television' all others are furniture.

**5.** (2) $X \xrightarrow{-2} V \xrightarrow{-2} T$

$L \xrightarrow{-2} J \xrightarrow{-2} H$

$F \xrightarrow{-2} D \xrightarrow{-2} B$

But,

$N \xrightarrow{+2} P \xrightarrow{+2} R$

**6.** (2) Except '–2' all are positive integers.

**7.** (2) In each next term, the number of letters is increasing by one.
bat ⇒ 3 letters
thin ⇒ 4 letters
reply ⇒ 5 letters
length ⇒ 6 letters
display ⇒ 7 letters

**8.** (1) In each next term, the number of letters is increasing by one. The series is based on the English alphabetical order. Again, alternate letter is small letter.
A b C → d E f G → h I j K l → M n O p Q r → S t U v W x Y

**9.** (4) $0.125, \frac{1}{27}, \frac{1}{64}, ?, \frac{1}{216}$

↓ ↓ ↓ ↓

$\frac{1}{8} \quad \frac{1}{27} \quad \frac{1}{64} \quad ↓ \quad \frac{1}{216}$

↓ ↓ ↓ ↓

$\frac{1}{2^3} \quad \frac{1}{3^3} \quad \frac{1}{4^3} \quad \frac{1}{5^3} \quad \frac{1}{6^3}$

$\therefore \frac{1}{5^3} = \frac{1}{125}$

$= \frac{1 \times 8}{125 \times 8} = \frac{8}{1000} = 0.008$

**10.** (3) 5th June = Monday
Total days between 5th June and 11th December
= 25 + 31 + 31 + 30 + 31 + 30 + 11
= 189 days
= 27 weeks
Therefore, 11th December
= Monday

**11.** (2) Possible weights of combinations of boxes :
(i) 40 + 30 = 70
(ii) 40 + 50 = 90
(iii) 40 + 20 = 60

(iv) 30 + 50 = 80
(v) 30 + 20 = 50
(vi) 50 + 20 = 70
(vii) 40 + 30 + 50 = 120
(viii) 40 + 30 + 20 = 90
(ix) 30 + 50 + 20 = 100
(x) 40 + 50 + 20 = 110
(xi) 40 + 30 + 50 + 20 = 140

**12.** (1) There is no 'A' letter in the given word. Therefore, the word NAMES cannot be formed.

[T] O K [E] N [I S M]
⇒ EMITS

[T O] K [E N] I [S] M
⇒ STONE

T [O] K [E N I S] M
⇒ NOISE

**13.** (3)

S Q U A L O R
+2 +2 +2 +2 +2 +2 +2
U S W C N Q T

Therefore,

W H Y
+2 +2 +2
Y J A

**14.** (4)

| + ⇒ × | − ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ − |

$9 + 3 - 72 \times 6 \div 3 = ?$
$\Rightarrow ? = 9 \times 3 + 72 \div 6 - 3$
$\Rightarrow ? = 27 + 12 - 3 = 36$

**15.** (2) $19 \# 13 = (19 - 13) \div 2$
$6 \div 2 = 3$
$25 \# 3 = 11 = (25 - 3) \div 2 = 11$
$= 22 \div 2 = 11$
$36 \# 10 = 13 = (36 - 10) \div 2 = 13$
$= 26 \div 2 = 13$
Therefore,
$7 \# 3 = (7 - 3) \div 2$
$= 4 \div 2 = 2$

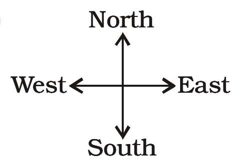
**16.** (4) First Row
$(10 - 4) \times 2 = 12$
$\Rightarrow 6 \times 2 = 12$
Third Row
$(8 - 5) \times 1 = 3$
$\Rightarrow 3 \times 1 = 3$
Second Row
$(7 - ?) \times 3 = 15$

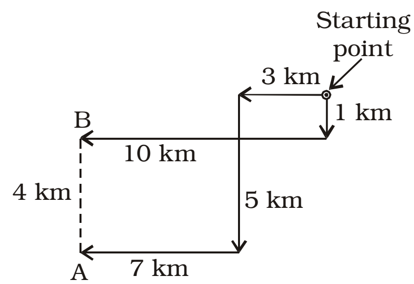
$\Rightarrow 7 - ? = \frac{15}{3}$

$\Rightarrow 7 - ? = 5$

$\Rightarrow ? = 7 - 5 = \boxed{2}$

**17.** (2)

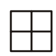


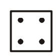




Now, B is 4 km north of A.

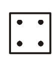
**18.** (1) Clearly, only argument I seems to be strong. It is the duty of concerned authority to prevent accidents.

**19.** (2) After folding the figure :

[∗] lies opposite .

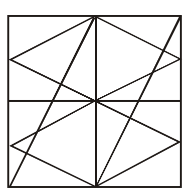
[☆] lies opposite .

[⊕] lies opposite [○].

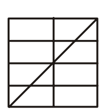
[☆] cannot be on the face adjacent to . Therefore, the cube given against option (2) cannot be formed.

**20.** (1) Architects who are Geologists can be represented by the letters which are common to the circle and the triangle. Such letters are A and B.

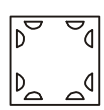
**21.** (3)



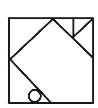
**22.** (2)



**23.** (4)



**24.** (2)



**25.** (4) S = 68, 86, 88, 99, 95
I = 10, 24
Z = 59, 65
E = 00, 02, 20

| Option | S | I | Z | E |
|---|---|---|---|---|
| (1) | ~~34~~ | ~~32~~ | ~~98~~ | ~~77~~ |
| (2) | ~~42~~ | ~~00~~ | ~~99~~ | ~~77~~ |
| (3) | ~~03~~ | ~~44~~ | ~~67~~ | ~~77~~ |
| (4) | 95 | 24 | 59 | 20 |

**26.** (3) A centrally planned economy is an economic system in which the state or government makes economic decisions rather than the interaction between consumers and businesses. Centrally planned economies assume that the market does not work in the best interest of the people and that a central authority needs to make decisions to meet social and national objectives.

**27.** (1) The law of diminishing marginal Product states that in a production process, as one input variable is increased, there will be a point at which the marginal per unit output will start to decrease, holding all other factors constant. In other words, keeping all other factors constant, the additional output gained by another one unit increase of the input variable will eventually be smaller than the additional output gained by the previous increase in input variable. At that point, the diminishing marginal returns take effect.

**28.** (3) The Supreme Court, as the highest Court of Appeal, stands at the apex of the Indian judiciary. According to Article 132(1) an appeal shall lie to the Supreme Court from any judgement, decree or final order of a High Court in the territory of India, whether in a civil, criminal or other proceedings, if the High Court certifies that the case involves a substantial question of law as to the interpretation of the Constitution.

**29.** (3) Article 217(1) provides that every High Court judge shall be appointed by the President after consultation with the Chief Justice of India, the Governor of the State and, in the case of appointment of a judge other than the Chief Justice, the Chief Justice of the High Court. Prior to the enactment of the Constitution 15th Amendment Act, 1963, the retirement age was 60 years for High Court judges, but now it is 62 years.

**30.** (4) The British forced Indian farmers to produce jute in Bengal, tea in Assam, sugarcane in Uttar Pradesh, wheat in Punjab, cotton in Maharashtra and Punjab and rice in Madras.

**31.** (2) Didda was the ruler of Kashmir from 958 AD to 1003 AD, first as a Regent for her son and various grandsons, and from 980 as sole ruler and monarch. Most knowledge relating to her is obtained from the Rajatarangini, a work written by Kalhana in the twelfth century.

**32.** (4) There is an international border in North-West that runs between India and Pakistan and demarcates the states of India from the four provinces of Pakistan. The Line of Control (LoC) separates Jammu and Kashmir of India from Pakistan occupied Kashmir (PoK). The Wagha Border dissevers the Indian state of Punjab from the province of Punjab in Pakistan. The Zero Point separates India's Gujarat and Rajasthan from Pakistan's Sindh.

**33.** (3) Kumaun Himalayas are west-central section of the Himalayas in northern India, extending 320 km from the Sutlej River east to the Kali River. The range, comprising part of the Siwalik Rangein the south and part of the Great Himalayas in the north, lies largely within the state of Uttarakhand, northwest of Nepal.

**34.** (1) The Solanum family of plants is a large genus under the family umbrella of Solanaceae that includes up to 2,000 species, ranging from food crops, such as the potato and the tomato, to various ornamentals and medicinal species.

**35.** (2) Xylem is a conducing tissue in plants that is meant to conduct water and minerals upwards from the roots to the leaf. The first xylem to develop is called 'protoxylem'. In appearance protoxylem is usually distinguished by narrower vessels formed of smaller cells.

**36.** (3) The annelids are grouped in three classes: the earthworms and freshwater worms (oligochaetes), the leeches(hirudineans), and the marine worms (polychaetes). Structurally, Annelids also have round, soft bodies with bilateral symmetry, and repeated organs in body segments. The digestive system of an Annelid is a straight tube that runs through the entire body.

**37.** (2) The larynx is a tough, flexible segment of the respiratory tract connecting the pharynx to the trachea in the neck. It plays a vital role in the respiratory tract by allowing air to pass through it while keeping food and drink from blocking the airway. The larynx is also the body's "voice box" as it contains the vocal folds that produce the sounds of speech and singing.

**38.** (2) Adult men and women have different vocal folds sizes; reflecting the male-female differences in larynx size. Adult male voices are usually lower-pitched and have larger folds. The male vocal folds, are between 17 mm and 25 mmin length. The female vocal folds are between 12.5 mm and 17.5 mm in length.

**39.** (2) The World Wide Web (WWW) is an information space where documents and other web resources are identified by Uniform Resource Locators (URLs), interlinked by hypertext links, and can be accessed via the Internet. English scientist Tim Berners-Lee invented the World Wide Webin 1989.

**40.** (3) The liquids which conduct electricity are called conducting liquids. A liquid which can conduct electricity is called an electrolyte. A conducting liquid or electrolyte contain ions that is positively charged and negatively charged ions. The flow of these ions conduct electricity through the conducting liquid or electrolyte. The solution of acids ,bases and salts in water are electrolytes.

**41.** (1) Magnesium hydroxide is a common component of antacids, such as milk of magnesia, as well as laxatives. Natural magnesium hydroxide (brucite) is used commercially as a fire retardant.

**42.** (2) Reforestation involves the replanting or regeneration of areas of forest which have previously been damaged or destroyed. Sometimes forests are able to regenerate naturally if sufficient trees remain nearby and seeds can be dispersed into the deforested areas via animals or wind. However, areas of forest which have been severely degraded are unlikely to be able to regenerate naturally and need to be replanted by hand using native tree species.

**43.** (1) Swachh Bharat Abhiyan or Clean India Mission was launched on October 2, 2014. It is covering 4041 statutory towns across India and aims to make the streets, roads and infrastructure clean by October 2, 2019. The goal also includes the elimination of open defecation, conversion of insanitary toilets to pour flush toilets, eradicating of manual scavenging and Municipal Solid Waste Management (MSWM).

**44.** (1) Sir Humphry Davy was a Cornish chemist and inventor who is best remembered today for isolating a series of substances for the first time: potassium and sodium in 1807 and calcium, strontium, barium, magnesium and boron the

following year, as well as discovering the elemental nature of chlorine and iodine.

**45.** (2) The 2016 Kabaddi World Cup, was an international kabaddi tournament governed by the International Kabaddi Federation, contested from 7 to 22 October 2016 in Ahmedabad. The tournament was won by India, who defeated Iran in the championship game to win their third Kabaddi World Cup.

**46.** (3) In 1644, Shahjahan commenced in Delhi his great mosque, the Jama Masjid the largest mosque in India and completed it in 1650. Its square quadrangle with arched cloisters on the sides and a tank in the center is 100 m. wide. Built on a raised plinth, it has three imposing gateways approached by long flights of steps. Its prayer-hall, with a facade of eleven arches, flanked by a four-storeyed minaret on either end, is covered by three large domes ornamented with alternating strips of black and white marble.

**47.** (1) The Sellout by Paul Beatty was winner of the 2016 Man Booker Prize for Fiction. It is a searing satire on race relations in contemporary America. A Brief History of Seven Killings. Lincoln in the Bardo by George Saunders is winner of the 2017 Man Booker Prize for Fiction. Lincoln in the Bardo is the first full-length novel from George Saunders, internationally renowned short story writer.

**48.** ( ) Wolf Hall (2009) is a historical novel by English author Hilary Mantel,

- Gilead is a novel written by Marilynne Robinson that was published in 2004.
- To Kill a Mockingbird is a novel by Harper Lee published in 1960.

**49.** (2) Norway, Australia, Switzerland and Germany lead the Human Development Index (HDI) rankings in 2016. The Position of U.K. was 16th. In 2017, India is ranked 131 out of 188 countries in HDI topped by Norway.

**50.** (2) Zero Point railway station is the eastern terminus of the Hyderabad–Khokhrapar Branch Line on the Pakistan–India border. The station was constructed in February 2006 and is used for immigration and customs of passengers who travel on the Thar Express between Pakistan and India.

**51.** (1) 1101111
$= 1 \times 2^6 + 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$
$= 64 + 32 + 8 + 4 + 2 + 1$
$= 111$

**52.** (4) In 9 days, A and B working together will do

$= 9\left(\frac{1}{18} + \frac{1}{36}\right) = 9\left(\frac{2+1}{36}\right)$

$= \frac{3}{4}$ th part

Remaining work $= 1 - \frac{3}{4} = \frac{1}{4}$

Required per cent $= \frac{1}{4} \times 100$

$= 25\%$

**53.** (1) Diagonal of square = 12 cm

$\therefore \sqrt{2} \times \text{Side} = 12$

$\Rightarrow \text{Side} = \frac{12}{\sqrt{2}} = \frac{6 \times 2}{\sqrt{2}}$

$= 6\sqrt{2}$ cm

**54.** (2) Let additional discount be $x$%.
According to the question,
70% of $(100 - x)$% of 2500
= 1400

$\Rightarrow 2500 \times \frac{70}{100} \times \frac{100 - x}{100}$
$= 1400$

$\Rightarrow 100 - x = \frac{1400 \times 100 \times 100}{2500 \times 70}$
$\Rightarrow 100 - x = 80$
$\Rightarrow x = 100 - 80 = 20\%$

**55.** (3) Third proportional of $a$ and $b = \frac{b^2}{a}$

Third proportional of 10 and $25 = \frac{(25)^2}{10}$

$= \frac{625}{10} = 62.5$

**56.** (4) Average weight of girls

$= \frac{50 \times 55.44 - 27 \times 72}{(50 - 27)}$

$= \frac{2772 - 1944}{23} \Rightarrow \frac{432}{8}$

$= \frac{828}{23} = 36$ kg.

**57.** (4) Cost Price of saree

$= \frac{1900 \times 100}{95} =$ ₹ 2000

For 15% profit,
Its selling price = 115% of 2000

$= \frac{2000 \times 115}{100} =$ ₹ 2300

**58.** (4) Let marks in science be $x$.
$\therefore$ Marks in Maths $= x + 30$
According to the question,
$x + 30 = 60\%$ of $(x + x + 30)$

$\Rightarrow x + 30 = (2x + 30) \times \frac{60}{100}$

$\Rightarrow x + 30 = (2x + 30) \times \frac{3}{5}$

$\Rightarrow 5x + 150 = 6x + 90$
$\Rightarrow 6x - 5x = 150 - 90$
$\Rightarrow x = 60$

**59.** (2) Let speed of Duranto be $x$ km/hr.
Speed of Express train
$= y$ km/hr
According to the question,

$\frac{432}{y} - \frac{432}{x} = 1 \quad \ldots(i)$

$\frac{432}{x} - \frac{432}{\frac{3y}{2}} = 2$

$\Rightarrow \frac{432}{x} - \frac{432 \times 2}{3y} = 2$

$\Rightarrow \frac{432}{x} - \frac{288}{y} = 2 \;\ldots\ldots (ii)$

Equation (i) + (ii).

$\frac{432}{y} - \frac{288}{y} = 3 \Rightarrow \frac{144}{y} = 3$

$\Rightarrow y = \frac{144}{3} = 48$ kmph.

From equation (i)

$\frac{432}{48} - \frac{432}{x} = 1 \Rightarrow 9 - 1$

$= \frac{432}{x} = 54$ kmph

**60.** (1) $A = P\left(1+\frac{r}{100}\right)^n$

$= 4000\left(1+\frac{12}{100}\right)$

$= 4000 \times \frac{112}{100} = ₹\ 4480$

Annual compound Interest
$= ₹\ (4480 - 4000) = ₹\ 480$
when compounded half yearly

$A = P\left(1+\frac{r}{100}\right)^n$

$= 4000\left(1+\frac{6}{100}\right)^2$

$= 4000 \times \frac{106}{100} \times \frac{106}{100}$

$= ₹\ 4494.40$
Compound Interest
$= ₹\ (4494.40 - 4000) = ₹\ 494.40$
Required difference
$= ₹\ 494.4 - 480$
$= ₹\ 14.4$

**61.** (1) $7x - \frac{[3(2x-3)]}{2} = \frac{1}{2}$

$\Rightarrow 14x - 6x + 9 = 1$
$\Rightarrow 8x = 1 - 9 = -8$

$\Rightarrow x = \frac{-8}{8} = -1$

**62.** (3) $a + b = 4$ and $ab = 3$
$\therefore a^3 + b^3 = (a+b)^3 - 3ab(a+b)$
$= (4)^3 - 3 \times 3 \times 4$
$= 64 - 36 = 28$

**63.** (1) Let the fraction be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$x + \frac{7}{x} = \frac{11}{2}$

$\Rightarrow x^2 + 7 = \frac{11x}{2}$
$\Rightarrow 2x^2 + 14 = 11x$
$\Rightarrow 2x^2 - 11x + 14 = 0$
$\Rightarrow 2x^2 - 4x - 7x + 14 = 0$
$\Rightarrow 2x(x-2) - 7(x-2) = 0$
$\Rightarrow (x-2)(2x-7) = 0$
$\Rightarrow x - 2 = 0 \Rightarrow x = 2$

$2x - 7 = 0 \Rightarrow x = \frac{7}{2}$

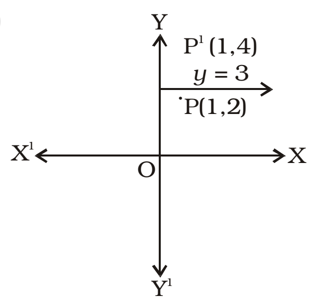
**64.** (4) Let the first term of A.P. be $a$ and its common difference be $d$.

$a + 2d = -8$ ...(1)
$a + 8d = 10$ ...(2)
$-\quad -\quad -$
$-6d = -18$

$d = \frac{-18}{-6} = 3$

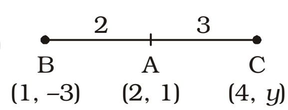
$\therefore a + 2d = -8$
$\Rightarrow a + 6 = -8$
$\Rightarrow a = -8 - 6 = -14$
$\therefore a_{16} = a + 15d = -14 + 15 \times 3$
$= -14 + 45 = 31$

**65.** (2)




Point P (1, 2) lies in the first quadrant.
$y = 3$ is parallel to $x$-axis.
Reflection with respect to it is (1, 2) which is P¹ (1, 4) with respect to $x$-axis

**66.** (4)




According to the question,

$\frac{2y + 3(-3)}{2+3} = 1$

$\Rightarrow 2y - 9 = 5$

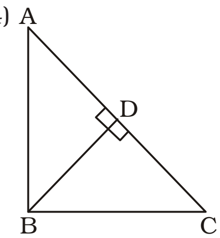
$\Rightarrow 2y = 14 \Rightarrow y = \frac{14}{2} = 7$

**67.** (3) $2x + 5y = -6$
When a line cuts $x$-axis then $y = 0$
putting $y = 0$ in $2x + 5y = -6$, we have
$2x + 5 \times 0 = -6$

$\Rightarrow x = \frac{-6}{2} = -3$

$\therefore$ Required point
$= (-3, 0)$

**68.** (4)




$\frac{BD}{DC} = \frac{AD}{BD}$

$BD^2 = DC \times AD$

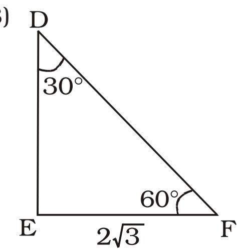
$BD = \sqrt{DC \times AD}$

$= \sqrt{16 \times 9} = \sqrt{144} = 12$ cm.

**69.** (1) $\tan 45° + \frac{4}{\sqrt{3}} \sec 60°$

$1 + \frac{4}{\sqrt{3}} \times 2 = 1 + \frac{8}{\sqrt{3}} = \frac{\sqrt{3}+8}{\sqrt{3}}$

**70.** (3)




In $\Delta DEF$,

$\tan 30° = \frac{EF}{DE}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{2\sqrt{3}}{DE}$

$\Rightarrow DE = 2\sqrt{3} \times \sqrt{3} = 6$ cm

**71.** (2) $\sin\theta = \frac{20}{29}$

$\therefore \cos\theta = \sqrt{1 - \sin^2\theta}$

$= \sqrt{1-\left(\frac{20}{29}\right)^2}$

$= \sqrt{1-\frac{400}{841}}$

$= \sqrt{\frac{841-400}{841}}$

$= \sqrt{\frac{441}{841}} = \frac{21}{29}$

**72.** (1) Company has marked loss in year 2013.

**73.** (2) The cumulative profit earned by the company in given six years
= Rs. (20 + 30 – 10 + 5 + 15 + 10) lakhs
= Rs. 70 Lakhs

**74.** (3) Required per cent

$= \frac{10}{20} \times 100 = 50\%$

**75.** (3) Reserves in the beginning of 2012 = Rs. [150 – (30 – 10 + 5 + 15] lakhs
= Rs. (150 – 40) lakhs
= Rs. 110 lakhs

**76.** (2) Here, the use of 'and' is superfluous, *i.e*, it is not needed here.
So, correct expression : The view of the downstream directly under/below/down the ...should be used.

**77.** (2) Here, the error lies in the wrong use of preposition.
So, correct expression : known even in his...

**78.** (3) Like intelligence quotient (IQ) and emotional quotient (EQ), there is fun quotient (FQ).
**Fun quotient :** the amount of time you spend doing things that are light-hearted or fun.

**79.** (4) **flock**
a flock of sheep
a shoal of fish
a block of apartments

**80.** (2) **Facsimile/replica (Noun)** = copy; duplicate; carbon copy
A facsimile of the manuscript.
**Disparate (Adjective)** = contrasting; different
**Peculiar (Adjective)** = strange; unusual
**Contrast (Noun)** = difference; disparity

**81.** (3) **Chauvinism/zealotry (Noun)** = excessive patriotism, blind partiotism; bigotry
**Look at the sentence :**
He has a tendency towards chauvinism.

**82.** (3) **Melody (Noun)** = tune; music
**Look at the sentence :**
He picked out an intricate melody on his guitar.
**Cacophony (Noun)** = din; racket; noise
**Look at the sentence :**
A cacophony of deafening alarm bells.
**Inflection (Noun)** = change in the quality of the voice
**Lyric (Noun)** = words of a song
**Chant (Verb)** = sing; chorus; carol

**83.** (3) **Bashful/meek/diffident/demure (Adjective)** = modest; shy; humble
**Look at the sentence :**
He is a diffident youth.
**Aggressive (Adjective)** = hostile; belligerent; bellicose
**Look at the sentence :**
He is very uncooperative and aggressive.

**84.** (2) **to be involved in a large and varied number of activities or enterprises**
**Look at the sentence :**
He very much likes to have a finger in every pie.
**Pie (Noun)** = a dish of fruit or meat and vegetables

**85.** (2) **to make a decision; decide**
**Look at the sentence :**
My uncle's son made up his mind to pursue IAS examination

**86.** (3) Might is a modal verb.
It is followed by $V_1$, *i.e*, (have).
And 'have' is an auxiliary verb and it is followed by $V_3$, *i.e*, (done, not doing)
Correct formation : might + have + done
or
might have done
'might have done' means: something was possible but did not, in fact, happen.

**87.** (1) 'He' is a singular subject. Hence, use a singular verb, *i.e.* was
'He was being' means : He was getting/becoming

**88.** (1) **Seriousness/gravity/solemnity (Noun)** = sobriety; earnestness; thoughtfulness.
**Look at the sentence :**
The absurdly lenient sentence is a travesty (mockery) of justice.

**89.** (1) **Satiety/gratification (Noun)** = satisfaction; sufficiency
**Apathy (Noun)** = indifference; aloofness
**Look at the sentence :**
He felt a yearning for the mountains.

**90.** (1) **Perverted** = unnatural; immoral.

**91.** (4) **Blandness** = lack of strong emotions.

**94.** (3) The students questions are always asswered by the tutor.
It is active voice of simple present tense.
Its passive voice is made as follows :
Subject + is/am/are + $V_3$ + by + object

**95.** (3) Mother asked Pritam if he would tell her what it meant.
It is direct speech of an interrogative sentence.
Its indirect speech is formed as follows :
⇒ 'said to' changes to asked
⇒ connector if/whether is used
⇒ 'will' changes to would
⇒ simple present changes to simple past
⇒ pronouns change as per $\frac{\text{SON}}{1\ 2\ 3}$
⇒ The interrogative sentence changes to the assertive sentence.

❑❑❑

SET 24

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 17.08.2017 (Shift-II)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Office : Colleagues : : Home : ?
(1) Rest (2) Work
(3) Friends (4) Family

**2.** Select the related letters from the given alternatives :
XVT : RPN : : LJH : ?
(1) FDB (2) ECA
(3) KIG (4) QOM

**3.** Select the related number from the given alternatives :
0.04 : 0.2 : : 0.09 : ?
(1) 0.3 (2) 0.6
(3) 0.9 (4) 2

**4.** Select the odd word from the given alternatives :
(1) Chair (2) Bench
(3) Bed (4) Sofa

**5.** Select the odd letters from the given alternatives :
(1) CEG (2) UXZ
(3) ORT (4) ILN

**6.** Select the odd number from the given alternatives :
(1) 75 (2) 65
(3) 82 (4) 85

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.
isobar, artist, statute, teapot, otter, ?
(1) pencil (2) erect
(3) tongue (4) meter

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
XX, XOX, XXXX, XXOXX, XXXXXX, ?
(1) XXXOXXXX
(2) XXXOXXX
(3) XXXXXXX
(4) XXXOXXXO

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.

$$3,\ \frac{5}{3},\ \frac{1}{3},\ ?,\ -\frac{7}{3},\ -\frac{11}{3}$$

(1) $-\frac{2}{3}$ (2) $-\frac{4}{3}$
(3) –1 (4) –2

**10.** Divit's birthday is on Friday 30th June. On what day of the week will be Samar's birthday in the same year if Samar was born on 15th November?
(1) Tuesday
(2) Friday
(3) Wednesday
(4) Saturday

**11.** The weights of 4 boxes are 100, 70, 50 and 90 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 310 (2) 260
(3) 230 (4) 210

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**RECLINES**
(1) SINCE (2) RELIC
(3) LINER (4) SCARE

**13.** If REGAINS is coded as QDFZHMR, then how will PRY be coded as?
(1) BJX (2) OQX
(3) LFT (4) PSU

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
45 × 5 + 2 – 20 = ?
(1) 17 (2) 81
(3) 38 (4) 64

**15.** If 5 @ 1 = 60; 12 @ 8 = 200; 16 @ 2 = 180; then what is the value of 16 @ 10 = ?
(1) 32 (2) 11
(3) 9 (4) 260

**16.** Select the missing number from the given responses :

| 104 | ? | 57 |
|---|---|---|
| 87 | 78 | 9 |
| 103 | 78 | 25 |

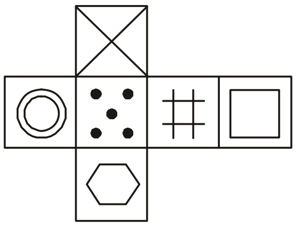
(1) 35 (2) 47
(3) 54 (4) 78

**17.** Two women A and B are shopping in a mall. They start from the same point. A walks 150 m West, then turns to her left and walks 160 m. B walks 140 m East, then turns South and walks 160 m, then turns to her left and walks 120 m. Where is B with respect to A now?
(1) 410 m West
(2) 410 m East
(3) 170 m East
(4) 170 m West

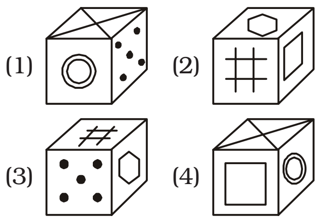
**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.
**Statement :** Should eating paan at public places be made punishable?
**Argument I :** Yes, people eat paan and spit and makes public places dirty.
**Argument II :** No, Indians love paan.
(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

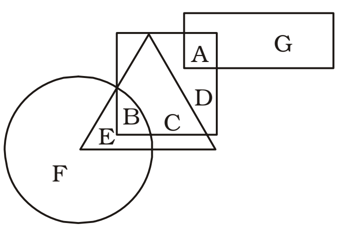
**Question Figure :**



**Answer Figures :**



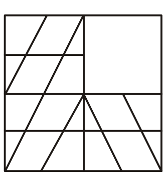
**20.** In the following figure, square represents Optometrists, triangle represents Painters, circle represents Vegetarians and rectangle represents Men. Which set of letters represents Painters who are either Men or Vegetarians?



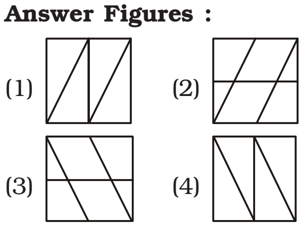

(1) D, F (2) E, B
(3) H, G ,F (4) A, C, E

**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

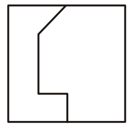


**Answer Figures :**

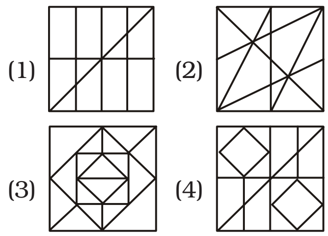


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

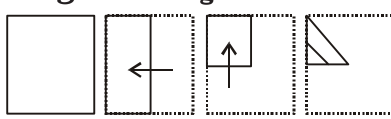


**Answer Figures :**

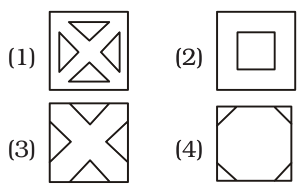


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

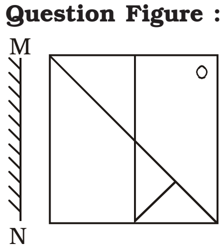


**Answer Figures :**

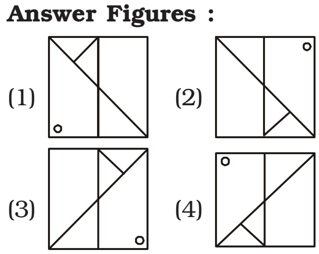


**24.** If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 42, 34 etc and 'Z' can be represented by 96, 79 etc. Similarly, you have to identify the set for the word **'ROAD'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | L | K | A | F | H |
| 1 | K | I | I | C | D |
| 2 | J | E | E | E | F |
| 3 | M | I | A | E | K |
| 4 | M | B | K | C | G |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | Q | S | R | U | Z |
| 6 | S | R | O | V | T |
| 7 | O | U | V | S | Z |
| 8 | V | Y | T | Y | S |
| 9 | Y | Z | O | U | V |

(1) 24,14, 67, 76
(2) 30, 22, 86, 56
(3) 66, 67, 02, 14
(4) 13, 43, 56, 86

## GENERAL AWARENESS

**26.** The _________ exchange rate is the relative price of foreign goods in terms of domestic goods.

(1) Artificial (2) Nominal
(3) Fixed (4) Real

**27.** __________ is an alternative way of representing the production function.

(1) The Short Run
(2) The Long Run
(3) Isoquant
(4) Average product

**28.** "United Nations Organization" is listed in the _________ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** There are total ________ parliamentary seats (Rajya Sabha constituency) in Punjab.
(1) 7 (2) 1
(3) 18 (4) 10

**30.** Big landlords or warrior chiefs in the seventh century were acknowledged as ________ by the existing kings?
(1) Rashtrakutas
(2) Chalukya
(3) Samantas
(4) Brahmanas

**31.** The Agra fort was built by
(1) Shah Jahan
(2) Akbar
(3) Jahangir
(4) Babur

**32.** How many states does India have as of June 2017?
(1) 26 (2) 27
(3) 28 (4) 29

**33.** The northern plain of India has been formed by the interplay of the three major river systems, namely– the Indus, the Ganga and the __________.
(1) Brahmaputra
(2) Krishna
(3) Kaveri
(4) Mahanadi

**34.** In the names Mangifera indica (mango), Solanum tuberosum (potato) and Panthera leo (lion), what does the three names, indica, tuberosum and leo, represent?
(1) Binomial Nomenclature
(2) Taxonomic Hierarchy
(3) Identification
(4) Specific Epithet

**35.** ______ are chlorophyll-bearing, simple, thalloid, autotrophic and largely acquatic (both fresh water and marine) organisms.
(1) Pteridophytes
(2) Bryophytes
(3) Algae
(4) Gymnosperms

**36.** Animals like annelids and arthropods etc where the body can be divided into identical left and right halves in only one plane, exhibit __________ symmetry.
(1) Coelenterata
(2) Radial
(3) Ctenophora
(4) Bilateral

**37.** If the orbit of a planet is an ellipse then what is the point at which the Sun is located called?
(1) Centre
(2) Circumcentre
(3) Incentre
(4) Focus

**38.** The sliding friction is ________ than the static friction.
(1) double (2) same
(3) greater (4) smaller

**39.** _______ optical data storage is a technology where data is stored in multiple layers in the optical disc.
(1) 3D (2) 30D
(3) 300D (4) 3000D

**40.** Kelvin (K) is the unit of measurement of _______.
(1) Density
(2) Pre ssure
(3) Mass
(4) Temp erature

**41.** What is the process of rust forming on iron called?
(1) Rusting
(2) Crystallisation
(3) Shovel
(4) Spade

**42.** _________ acts as a shield absorbing ultraviolet radiation from the sun.
(1) Chlorofluorocarbons
(2) Stratosphere
(3) Ozone hole
(4) Greenhouse

**43.** __________ scheme launched by the Central Government aims to spur social, economic and infrastructure development in rural areas by developing a cluster of 300 Smart Villages.
(1) Soil Health Card
(2) Shyama Prasad Mukherji Rurban Mission
(3) Pradhan Mantri Fasal Bima Yojana
(4) Pradhanmantri rojgar yojna

**44.** Who invented the electrocardiogram (ECG)?
(1) Willem Einthoven
(2) Edward Jenner
(3) Antoniode Ulloa and Charles Wood
(4) Karl Benz

**45.** Who is the winner of 2017 Formula One Chinese Grand Prix?
(1) Sebastian Vettel
(2) Lewis Hamilton
(3) Valtteri Bottas
(4) Kimi Raikkonen

**46.** In which city of India is Charminar located?
(1) Pune
(2) Delhi
(3) Aurangabad
(4) Hyderabad

**47.** Which of the following was the winner of the Grammy Awards 2016 "Record of the Year"?
(1) Uptown Funk
(2) Really Love
(3) Thinking Out Loud
(4) Blank Space

**48.** 1. The author of the novel 'Darkness at Noon' is Victor LaValle.
2. The author of the novel 'The Great Gatsby' is F. Scott Fitzgerald.
3. The author of the novel 'The Sound and the Fury' is L. Ron Hubb ard.

Which of the statements given above are not correct?
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** What was Norway's rank in 2016 Human Development Index published by the United Nations Development Programme?
(1) 1 (2) 10
(3) 100 (4) 200

**50.** Which country is not a member of Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)?
(1) Thailand (2) Myanmar
(3) India (4) Pakistan

## QUANTITATIVE APTITUDE

**51.** What is the value of (9991 × 10009) ?
(1) 99999099
(2) 99999819
(3) 99999919
(4) 99999019

**52.** A can do $\frac{1}{3}$ rd of a job in 3 days and B can do half of the job in 9 days. If they work on it together, then in how many days can they finish half of the job?
(1) 4 (2) 5
(3) 6 (4) 3

**53.** What is the area (in sq. cm.) of a rhombus if the lengths of its diagonals are 25 cm and 20 cm?
(1) 500 (2) 250
(3) 125 (4) 200

**54.** If a shopkeeper sells an item at Rs. 4200 which is marked as Rs. 4800, then what is the discount (in %) that he is offering?
(1) 12.5 (2) 14.28
(3) 10 (4) 15

**55.** The flight fare between two cities is increased in the ratio 11 : 13. What is the increase (in Rs.) in the fare, if the original fare was Rs. 12100?
(1) 14300 (2) 2200
(3) 22000 (4) 1430

**56.** Of the three numbers whose average is 112, the first number is $\frac{1}{6}$ th of the sum of other two. What is the first number?
(1) 45 (2) 30
(3) 15 (4) 48

**57.** A trader buys 800 kgs of tomatoes for Rs. 7200. 10% of the tomatoes are damaged in transportaion. At what rate (Rs./kg) should he sell the rest to earn 30% profit?
(1) 9 (2) 13
(3) 10 (4) 12

**58.** A student has to secure 35% marks to pass in a subject. If he gets 82 and fails by 23 marks, what is the maximum marks of the subject?
(1) 300 (2) 250
(3) 350 (4) 400

**59.** A spaceship travels at 810 km/hr. How many metres does it travel in $\frac{1}{5}$ th of a second?
(1) 60 (2) 45
(3) 75 (4) 90

**60.** If the amounts received at the end of 2nd year and 3rd year as compound interest on a certain principal are Rs. 2100, and Rs. 2268 respectively, what is the rate (in %) of interest?
(1) 7 (2) 8
(3) 9 (4) 10

**61.** If $5x-\left(\frac{1}{2}\right)(2x-7)=5.5$, then what is the value of $x$ ?
(1) $\frac{3}{2}$ (2) $\frac{1}{2}$
(3) $-\frac{1}{2}$ (4) $-\frac{3}{2}$

**62.** If $a + b = 4$ and $ab = -5$, then what is the value of $(a^3 + b^3)$ ?
(1) 34 (2) 36
(3) 124 (4) 126

**63.** The sum of a number and 4 times its reciprocal is 5. What is the number?
(1) 4 (2) 5
(3) 6 (4) 7

**64.** The 3rd term and 8th term of an arithmetic progression are –13 and 2 respectively. What is the 14th term?
(1) 23 (2) 17
(3) 20 (4) 26

**65.** What is the reflection of the point (4 , –3) in the line $y = 1$?
(1) (4, –5) (2) (4, 5)
(3) (–4, –5) (4) (–4, 5)

**66.** In what ratio does the point T ($x$, 0) divide the line segment joining the points S (5, 1) and U (–1, –2)?
(1) 2 : 1 (2) 1 : 2
(3) 3 : 1 (4) 2 : 3

**67.** At what point does the line $3x + 2y = 12$ cuts the Y–axis?
(1) (0, 6) (2) (0, –6)
(3) (6, 0) (4) (–6, 0)

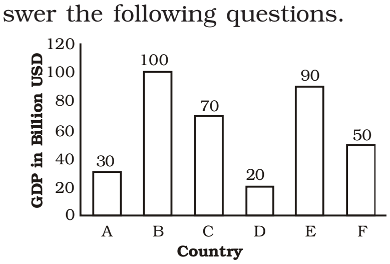
**68.** The areas of two similar triangles ΔABC and ΔPQR are 121 sq. cm. and 64 sq. cm. respectively. If PQ = 12 cm, what is the length (in cm) of AB?
(1) 7.25 (2) 6.25
(3) 16.5 (4) 5.25

**69.** What is the value of tan 60° + cosec 60°?
(1) $\frac{5}{3}$ (2) $\frac{2}{\sqrt{3}}$
(3) $\frac{5}{\sqrt{3}}$ (4) $\frac{2}{3}$

**70.** ΔXYZ is right angled at Y. If $m\angle Z = 60°$, then what is the value of $\left(\frac{1}{\sqrt{2}}\right)$ secX ?
(1) $\frac{2}{\sqrt{3}}$ (2) $\frac{1}{\sqrt{6}}$
(3) $\frac{1}{\sqrt{3}}$ (4) $\frac{2}{\sqrt{6}}$

**71.** If cosec θ = $\frac{17}{8}$, then what is the value of cosθ ?
(1) $\frac{15}{8}$ (2) $\frac{15}{17}$
(3) $\frac{8}{15}$ (4) $\frac{17}{15}$

**Directions (72–75) :** The bar graph shows GDP for the year 2016 in billion USD of six countries (A, B, C, D, E, F) of a regional trade block. Study the diagram and answer the following questions.




**72.** Which country is the third biggest in terms of Gross Domestic Product (GDP)?
(1) A (2) C
(3) E (4) F

**73.** By what amount (in billion USD) is the Gross Domestic Product (GDP) of Country A lesser than that of Country F?
(1) 20 (2) 50
(3) 25 (4) 40

**74.** What is the ratio of Gross Domestic Product (GDP) of country E to Total of GDPs of countries A, C and F taken together?
(1) 3 : 5 (2) 5 : 3
(3) 9 : 5 (4) 5 : 9

**75.** If the combined GDP of the six countries has grown by 50% in the last decade, then what was their combined annual Gross Domestic Product (in billion USD) before 10 years?
(1) 540 (2) 180
(3) 240 (4) 200

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** Water was dripping (1)/ of the trees, and (2)/ the grass was wet. (3)/No Error (4)

**77.** Pravin sat up on the (1)/ sofa, with his legs (2)/ tucked down him. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** At night, the hungry orphan would sneak into the kitchen and _______ tiny amounts of food.
(1) prefer (2) lifter
(3) differ (4) pilfer

**79.** As the only _______ person in the wacky family, the sensible girl felt like the odd woman out.
(1) insane (2) vain
(3) sane (4) main

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Piquancy**
(1) Bland (2) Flavouring
(3) Insipid (4) Tedious

**81. To Confront**
(1) To avoid (2) To dodge
(3) To yield (4) To accost

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Savant**
(1) Amateur (2) Academic
(3) Pundit (4) Egghead

**83. To indict**
(1) To arraign
(2) To censure
(3) To exonerate
(4) To impeach

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To have bitten off more than you can chew**
(1) To eat voraciously and then fall sick
(2) To behave disrespectfully towards elders and then repent the act
(3) To have tried to do something which is too difficult
(4) To have missed a golden opportunity and after that willing to put twice the effort to recover the loss

**85. Out of print**
(1) Not able to print due to being short on paper
(2) A book no longer available from the publisher
(3) Intentionally not mention some items in the article or book
(4) All publishers refuse to publish your book

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "no improvement".

**86.** I'm **(having to)** too much fun.
(1) having
(2) had
(3) has
(4) No improvement

**87.** What would the cavalry **(doing)** out here?
(1) be doing
(2) be done
(3) done
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. In exactly the same words as were used originally**
(1) Verbatim (2) Offbeat
(3) Divergent (4) Contrary

**89. A person inclined to question or doubt accepted opinions**
(1) Adherent (2) Sceptic
(3) Zealot (4) Disciple

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Ditheering
(2) Dethering
(3) Dithering
(4) Detheering

**91.** (1) Throtled (2) Throttlede
(3) Throtlede (4) Throttled

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. Children are sensitive**
X. to what happens around them and are
Y. enthusiastic about working on
Z. plays that reflect their lives
(1) ZYX (2) XYZ
(3) ZXY (4) YZX

**93. But this does not mean**
X. phenomena to the body
Y. is a meaningless expression
Z. that the reference of mental
(1) YZX (2) ZXY
(3) YXZ (4) XZY

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**The travel agent is making all the reservations.**

(1) All the reservations is made by the travel agent.
(2) All the reserving will be made by the travel agent.
(3) All the reservations are being made by the travel agent.
(4) All the reserving is made by the travel agent.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**He said to the dentist, "I have a toothache."**

(1) He told the dentist that I have a toothache.
(2) He told the dentist that he had gotten a toothache.
(3) He told the dentist that he had a toothache.
(4) He told the dentist that I have a gotten toothache.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

The Trikonasana, or triangle pose, stimulates the function of the entire body and **(96)** a lateral (side) stretch to the spine. It helps reduce blood pressure, stress, and anxiety. Practise this asana every day and you'll **(97)** strength in the ankles, thighs, knees, hips, calves and hamstrings. All standing poses **(98)** the cardiovascular system, so the more you do it, the **(99)** your stamina will become. The aim is never to overdo it, but to engage regularly, **(100)** that you get stronger and more stable over time.

**96.** (1) given (2) gave (3) to give (4) gives
**97.** (1) gaining (2) gain (3) gained (4) to gain
**98.** (1) built (2) build (3) building (4) to build
**99.** (1) best (2) better (3) good (4) too good
**100.** (1) if (2) of (3) so (4) to

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (1) | **3.** (1) | **4.** (3) |
| **5.** (1) | **6.** (3) | **7.** (2) | **8.** (2) |
| **9.** (3) | **10.** (3) | **11.** (3) | **12.** (4) |
| **13.** (2) | **14.** (3) | **15.** (4) | **16.** (2) |
| **17.** (2) | **18.** (1) | **19.** (2) | **20.** (2) |
| **21.** (3) | **22.** (3) | **23.** (3) | **24.** (4) |
| **25.** (3) | **26.** (4) | **27.** (3) | **28.** (1) |
| **29.** (1) | **30.** (3) | **31.** (2) | **32.** (4) |
| **33.** (1) | **34.** (4) | **35.** (3) | **36.** (4) |
| **37.** (4) | **38.** (4) | **39.** (1) | **40.** (4) |
| **41.** (1) | **42.** (2) | **43.** (2) | **44.** (1) |
| **45.** (2) | **46.** (4) | **47.** (1) | **48.** (3) |
| **49.** (1) | **50.** (4) | **51.** (3) | **52.** (4) |
| **53.** (2) | **54.** (1) | **55.** (2) | **56.** (4) |
| **57.** (2) | **58.** (1) | **59.** (2) | **60.** (2) |
| **61.** (2) | **62.** (3) | **63.** (1) | **64.** (3) |
| **65.** (2) | **66.** (2) | **67.** (1) | **68.** (3) |
| **69.** (3) | **70.** (4) | **71.** (2) | **72.** (2) |
| **73.** (1) | **74.** (1) | **75.** (3) | **76.** (2) |
| **77.** (3) | **78.** (4) | **79.** (3) | **80.** (2) |
| **81.** (4) | **82.** (1) | **83.** (3) | **84.** (3) |
| **85.** (2) | **86.** (1) | **87.** (1) | **88.** (1) |
| **89.** (2) | **90.** (3) | **91.** (4) | **92.** (2) |
| **93.** (2) | **94.** (3) | **95.** (3) | **96.** (4) |
| **97.** (2) | **98.** (2) | **99.** (2) | **100.** (3) |

## EXPLANATIONS

**1.** (4) A person with whom one works in same office or organisation is called colleague. Similarly, the associated members who reside in a home constitute a family.

**2.** (1) X V T : R P N

X $\xrightarrow{-6}$ R, V $\xrightarrow{-6}$ P, T $\xrightarrow{-6}$ N

Similarly,

L J H : F D B

L $\xrightarrow{-6}$ F, J $\xrightarrow{-6}$ D, H $\xrightarrow{-6}$ B

**3.** (1) $\sqrt{0.04} = 0.2$

Similarly,

$\sqrt{0.09} = 0.3$

**4.** (3) Bed is a furniture to sleep or rest on. Chair, Bench and sofa are used for sitting.

**5.** (1) $U \xrightarrow{+3} X \xrightarrow{+2} Z$

$O \xrightarrow{+3} R \xrightarrow{+2} T$

$I \xrightarrow{+3} L \xrightarrow{+2} N$

But,

$C \xrightarrow{+2} E \xrightarrow{+2} G$

**6.** (3) Except the number '82' all others are odd numbers. Again, except the number 82, all others are multiples of five.

**7.** (2) The next word starts with the last two letters of the previous word.

isobar, artist, statute, teapot

otter, erect

**8.** (2) In the first step 'O' is added in the middle of the letter group. In the second step 'O' is deleted and two 'Xs' are added.

These two steps are continued alternately.

**9.** (3)

$3, \frac{5}{3}, \frac{1}{3}, \boxed{-1}, \frac{-7}{3}, \frac{-11}{3}$

$-\frac{4}{3}\quad -\frac{4}{3}\quad -\frac{4}{3}\quad -\frac{4}{3}\quad -\frac{4}{3}$

**10.** (3) 30th June = Friday

Number of days from 30th June to 15th November

= 31 + 31 + 30 + 31 + 15

= 138 days

= 19 weeks + 5 days

Number of odd days = 5

Friday + 5 = Wednesday

**11.** (3) Possible weights of combinations of boxes :

(i) 100 + 70 = 170
(ii) 100 + 50 = 150
(iii) 100 + 90 = 190
(iv) 100 + 70 + 50 = 220
(v) 100 + 70 + 90 = 260
(vi) 100 + 70 + 50 + 90 = 310
(vii) 70 + 50 = 120
(viii) 70 + 90 = 160
(ix) 70 + 50 + 90 = 210
(x) 50 + 90 = 140
(xi) 100 + 50 + 90 = 240

**12.** (4) There is no 'A' letter in the given word. Therefore, the word SCARE cannot be formed.

R [E C] L [I N] E [S]
⇒ SINCE

[R E C L I] N E S ⇒ RELIC

[R] E C [L I N E] S
⇒ LINER

**13.** (2)

| R | E | G | A | I | N | S |
|---|---|---|---|---|---|---|
| ↓ –1 | ↓ –1 | ↓ –1 | ↓ –1 | ↓ –1 | ↓ –1 | ↓ –1 |
| Q | D | F | Z | H | M | R |

Therefore,

| P | R | Y |
|---|---|---|
| ↓ –1 | ↓ –1 | ↓ –1 |
| O | Q | X |

**14.** (3)

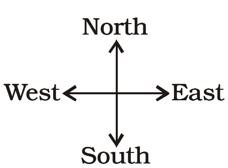
| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

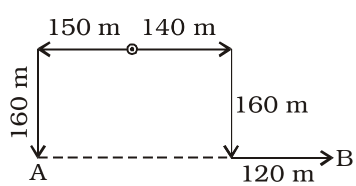
$45 \times 5 + 2 - 20 = ? \Rightarrow ? = 45 \div 5 \times 2 + 20$
$\Rightarrow ? = 9 \times 2 + 20$
$\Rightarrow ? = 18 + 20 = 38$

**15.** (4) 5 @ 1 = (5 + 1) × 10
= 6 × 10 = 60
12 @ 8 = (12 + 8) × 10
= 20 × 10 = 200
16 @ 2 = (16 + 2) × 10
= 18 × 10 = 180
Therefore,
16 @ 10 = (16 + 10) × 10
= 26 × 10 = 260

**16.** (2) Second Row
87 – 78 = 9
Third Row
103 – 78 = 25
Therefore,
First Row
104 – ? = 57
⇒ ? = 104 – 57 = 47

**17.** (2)



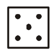
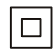

AB = (150 + 140 + 120) metres
= 410 metres
Direction ⇒ East

**18.** (1) Only argument I is strong. It is our duty to deep clean public places.

**19.** (2) After folding the figure :

lies opposite [#].

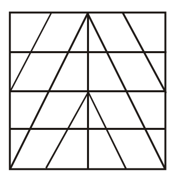
lies opposite .

 lies opposite .

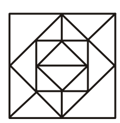
The cube given against option (2) is not possible.

**20.** (2) Painters who are vegetarians can be represented by letters which are common to the triangle and the circle. Such letters are E and B. Painters who are men can be represented by letters which are common to the triangle and the rectangle. There is no such letter.

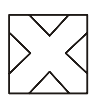
**21.** (3)



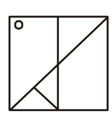
**22.** (3)



**23.** (3)



**24.** (4)



**25.** (3) R = 57, 66
O = 67, 75, 97
A = 02, 32
D = 14

| Option | R | O | A | D |
|---|---|---|---|---|
| (1) | ~~24~~ | ~~14~~ | ~~67~~ | ~~76~~ |
| (2) | ~~30~~ | ~~22~~ | ~~86~~ | ~~56~~ |
| (3) | 66 | 67 | 02 | 14 |
| (4) | ~~13~~ | ~~43~~ | ~~56~~ | ~~86~~ |

**26.** (4) The real exchange rate describes how many of a good or service in one country can be traded for one of that good or service in another country. The units on real exchange rates, therefore, are units of foreign good over units of domestic good, since real exchange rates show how many foreign goods you can get per unit of domestic good.

**27.** (3) The isoquant curve is a contoured line that is drawn through points that produce the same quantity of output, while the quantities of inputs usually two or more are changed. The mapping of the isoquant curve addresses cost minimization problems for producers.

**28.** (1) In the union list, there are total 97 subjects. Foreign affairs, citizenship, railways, national highways, ports, interstate trade and commerce, banking, stock exchange etc. are under the preview of the parliament. United Nations Organization is subject 12 under Union List.

**29.** (1) Punjab Rajya sabha Members Party-Wise are

- Bhartiya Janata Party(BJP) has 1 member
- Indian National Congress (INC) has 3 members
- Shiromani Akali Dal (SAD) has 3 members

**30.** (3) After Harshavardhan, new kingdoms and dynasties emerged. They were big landlords or warrior chiefs who emerged close to 7th century. The Kings acknowledged them as Samanthas, and received gift from these samanthas, who provided the militray support to the kings in need. They often declared themselves as 'maha-samanthas' and 'maha-mahadaleshvara'.

**31.** (2) Agra Fort is located on the right bank of the river Yamu-

na in the city of Agra in Uttar Pradesh. It was constructed by the third Mughal emperor Akbar on the remains of an ancient site known as Badalgarh. Sikandar Lodi (1487-1517) was the first Sultan of Delhi to shift his capital from Delhi to Agra.

**32.** (4) India comprises 29 states and seven Union Territories. In November 2000, India gained three new states; Chattisgarh carved out of Madhya Pradesh, Uttaranchal from Uttar Pradesh, and Jharkhand from Bihar. Telangana was created on 2 June, 2014 as ten former districts of north-western Andhra Pradesh.

**33.** (3) The Great plain of Northern India was formed by the sediments brought down by the Indus-Ganga-Brahmaputra and their tributaries and it is popularly known as the Indo-Ganga-Brahmaputra plain.

**34.** (4) The International Code of Zoological Nomenclature (ICZN) governs the naming of animals, the International Code of Nomenclature for algae, fungi, and plants (ICN) that of plants and the International Code of Nomenclature of Bacteria (ICNB) that of bacteria. In the zoological code (ICZN), the second part of the name is a 'specific name'. In the botanical code (ICN), it is a 'specific epithet'.

**35.** (3) The word algae represent a large group of different organisms from different phylogenetic groups, representing many taxonomic divisions. In general algae can be referred to as plant-like organisms that are usually photosynthetic and aquatic, but do not have true roots, stems, leaves, vascular tissue and have simple reproductive structures. They are distributed worldwide in the sea, in freshwater and in moist situations on land.

**36.** (4) Symmetry is the arrangement of shapes or body parts so that they are equal on each side of a dividing line. Bilateral symmetry is the arrangement of body parts into left and right halves on either side of a central axis. Many animals, including humans, exhibit bilateral symmetry.

**37.** (4) The orbit of each planet is an ellipse with the Sun at one focus. An ellipse is defined as the locus of all points such that the sum of the distances from two foci to any point on the ellipse is a constant.

**38.** (4) Friction comes to play when irregularities present in the surfaces of two objects in contact get interlocked with each other. In sliding friction, the time given for interlocking is very small. Hence, interlocking is not very strong. Therefore, less force is required to overcome this interlocking. Because of this sliding friction is less than static friction.

**39.** (1) 3D optical data storage is the term given to any form of optical data storage in which information can be recorded and/or read with three dimensional resolution (as opposed to the two dimensional resolution afforded, for example, by CD). This innovation has the potential to provide petabyte-level mass storage on DVD-sized disks.

**40.** (4) Kelvin (K), base unit of thermodynamic temperature measurement in the International System of Units (SI). The kelvin is also the fundamental unit of the Kelvin scale, an absolute temperature scale named for the British physicist William Thomson (known as Lord Kelvin).

**41.** (1) Rusting is a chemical process, which is common with the metals containing iron. For rusting to take place, there should be certain conditions. In the presence of oxygen and moisture or water, iron undergoes this reaction and form a series of iron oxide. This reddish-brown color compound is known as rust.

**42.** (2) Stratosphere is layer of Earth's atmosphere lying between the troposphere and the mesosphere. Ozone and oxygen molecules in the stratosphere absorb ultraviolet light from the sun, providing a shield that prevents this radiation from passing to the earth's surface. While both oxygen and ozone together absorb 95 to 99.9% of the sun's ultraviolet radiation, only ozone effectively absorbs the most energetic ultraviolet light, known as UV-C and UV-B, which causes biological damage.

**43.** (2) Shyama Prasad Mukherji Rurban Mission (SPMRM) aims at development of rural growth clusters which have latent potential for growth, in all States and UTs, which would trigger overall development in the region. It aims to create 300 such Rurban growth clusters over the next 3 years, across the country.

**44.** (1) Willem Einthoven was a Dutch doctor and physiologist. In 1924, Einthoven was awarded the Nobel Prize in Medicine for inventing the first practical system of electrocardiography used in medical diagnosis.

**45.** (2) The 2017 Chinese Grand Prix was a Formula One motor race that took place on 9 April, 2017 at the Shanghai International Circuit in Shanghai, China. Lewis Hamilton took his sixth consecutive pole position at the Chinese Grand Prix, ahead of Sebastian Vettel and teammate Valtteri Bottas.

**46.** (4) The Charminar constructed in 1591, is a monument and mosque located in Hyderabad, Telangana, India. This 400-

years-old structure was built by Sultan Muhammed Quli Qutb Shah, the 5th Sultan of the illustrious Qutb Shahi dynasty.

**47.** (1) The Grammy Award for Record of the Year is presented by the National Academy of Recording Arts and Sciences of the United States to honor artistic achievement, technical proficiency and overall excellence in the recording industry, without regard to sales or chart position. It is often considered one of four top honors given out annually at the Grammy Awards. Uptown Funk was the winner for 2016 and 'Hello' for the year 2017.

**48.** (3) Darkness at Noon is a novel by Hungarian-born British novelist Arthur Koestler

- The Great Gatsby is a 1925 novel written by American author F. Scott Fitzgerald.
- The Sound and the Fury is a novel written by the American author William Faulkner.

**49.** (1) The Human Development Index measures the standard of living, or quality of life, in all the countries in the world. Norway is currently ranked as the top country in human development. Norway has been ranked as the top country every year since 2001 except in 2007 and 2008 when Iceland ranked higher.

**50.** (4) The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) constitutes seven Member States : five deriving from South Asia, including Bangladesh, Bhutan, India, Nepal, Sri Lanka, and two from Southeast Asia, including Myanmar and Thailand.

**51.** (3) $9991 \times 10009$
$= (10000 - 9) \times (10000 + 9)$
$[\because a^2 - b^2 = (a + b)(a - b)]$
$= (10000)^2 - (9)^2$
$= 100000000 - 81$
$= 99999919$

**52.** (4) $\because$ A does $\frac{1}{3}$ rd of a work in 3 days
$\therefore$ A will do whole work in 9 days.
$\therefore$ B, does $\frac{1}{2}$ part of work in 9 days.
$\therefore$ B will complete the whole work in 18 days.
Working together, they will do whole work in
$\frac{xy}{x+y} = \frac{18 \times 9}{18+9} = \frac{18 \times 9}{27}$
= 6 days
$\therefore$ Half of the work will be completed in
$= \frac{1}{2} \times 6 = 3$ days

**53.** (2) Area of rhombus
$= \frac{1}{2} \times$ product of diagonals
$= \frac{1}{2} \times 25 \times 20 = 250$ sq.cm.

**54.** (1) Discount
= Marked price – Selling price
= Rs. (4800 – 4200) = Rs. 600
If the discount be $x$% then,
$x\%$ of $4800 = 600 \Rightarrow \frac{x \times 4800}{100} = 600$
$\Rightarrow x = \frac{600}{48} = 12.5\%$

**55.** (2) Original fare = Rs. 12100
Now, fare of flight increases in the ratio 11 : 13
$\therefore$ Increase in the fare
$= \frac{13-11}{11} \times 12100$
$= \frac{2}{11} \times 12100 =$ Rs. 2200

**56.** (4) Let numbers are $x$, $y$, and $z$.
$\therefore x + y + z = 3 \times 112$
$= 336$ ...... (i)
Again, $x = \frac{y+z}{6}$
$\Rightarrow 6x = y + z$ ..... (ii)
From equation (i),
$x + 6x = 336 \Rightarrow 7x = 336$
$\Rightarrow x = \frac{336}{7} = 48$

**57.** (2) C.P. of 800 × g of tomatoes
= Rs. 7200
S.P. of remaining tomatoes
= 130% of 7200
$= \frac{7200 \times 130}{100} =$ Rs. 9360
Remaining tomotoes
= 90% of 800
$= \frac{800 \times 90}{100} = 720$ kg.
S.P. of tomoto
= Rs. $\left(\frac{9360}{720}\right)$ per kg
= Rs. 13 kg.

**58.** (1) Let the maximum marks be $= x$.
According to the question,
35% of $x = 82 + 23$
$\Rightarrow x \times \frac{35}{100} = 105$
$\Rightarrow x = \frac{105 \times 100}{35} = 300$

**59.** (2) Speed of spaceship
= 810 km/hr
$= \left(810 \times \frac{5}{18}\right)$ m./sec.
= 225 m./sec.
$\therefore$ Distance covered in $\frac{1}{5}$ second
$= \frac{1}{5} \times 225 = 45$ metre

**60.** (2) According to the question, Rs. 2100 is the principal for third year.
$\therefore$ S.I. for one year
= Rs. (2268 – 2100) = Rs. 168
Rate $= \frac{\text{S.I.} \times 100}{\text{T} \times \text{P}}$
$= \frac{168 \times 100}{1 \times 2100} = 8\%$ *p.a.*

**61.** (2) $5x - \left(\frac{1}{2}\right)(2x - 7) = 5.5$
$\Rightarrow 5x - x + 3.5 = 5.5$
$\Rightarrow 4x = 5.5 - 3.5 \Rightarrow 4x = 2$
$\Rightarrow x = \frac{2}{4} = \frac{1}{2}$

**62.** (3) $a + b = 4$, $ab = -5$

$a^2 + b^2 = (a + b)^2 - 2ab$

$= (4)^2 - 2(-5) = 16 + 10 = 26$

$a^3 + b^3 = (a + b)\ (a^2 + b^2 - ab)$

$= (4)\ [26 - (-5)] = 4 \times 31 = 124$

**OR**

$a^3 + b^3 = (a + b)^3 - 3ab\ (a + b)$

$= (4)^3 - 3(-5)\ (4)$

$= 64 + 60 = 124$

**63.** (1) Let the number be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

$\therefore x + \frac{4}{x} = 5$

$\Rightarrow x^2 - 5x + 4 = 0$

$\Rightarrow x^2 - 4x - x + 4 = 0$

$\Rightarrow x\,(x - 4) - 1\,(x - 4) = 0$

$\Rightarrow (x - 4)\ (x - 1) = 0$

$\therefore x - 4 = 0 \Rightarrow x = 4;$

$x - 1 = 0 \Rightarrow x = 1$

**64.** (3) Let the first term of A.P. be $a$ and its common differece be $d$.

$\because a_n = a + (n - 1)\ d$

$\therefore a + 2d = -13$ .... (i)

$a + 7d = 2$ .... (ii)

By equation (i) – (ii),

$a + 2d = -13$ ...(1)

$a + 7x = 2$ ...(2)

$-5d = -15$

$\Rightarrow d = 3$

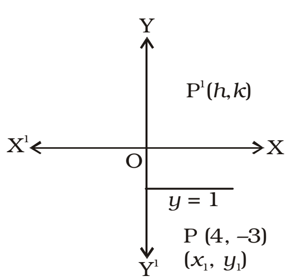
$a + 2d = -13$

$\Rightarrow a = -13 - 6 = -19$

$\therefore$ 14th term $= a + 13d$

$= -19 + 13 \times 3 = -19 + 39 = 20$

**65.** (2)




$y = 1 \Rightarrow y - 1 = 0$

Reflection of point (4, –3) on $y - 1 = 0$;

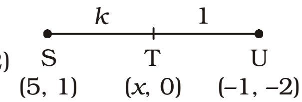
$k - y_1 = -2\ (y_1 - y)$

$\Rightarrow k + 3 = -2(-3 - 1)$

$\Rightarrow k + 3 = -2 \times -4 = 8$

$\Rightarrow k = 8 - 3 = 5$

**66.** (2)




Let T ($x$, 0) divides line segment SU in the ratio = K : 1

$\frac{(k(-2)) + 1 \times 1}{k + 1} = 0$

$-2k + 1 = 0 \Rightarrow -2k = -1$

$k = \frac{1}{2} = 1 : 2$

**67.** (1) $3x + 2y = 12$

$\Rightarrow \frac{3x}{12} + \frac{2y}{12} = \frac{12}{12}$

$\Rightarrow \frac{x}{4} + \frac{y}{6} = 1$

Line $3x + 2y = 12$, cuts Y-axis at point (0, 6).

**OR**

At $y$-axis, $x$-coordinate = 0

$\therefore$ Putting $x = 0$ in $3x + 2y = 12$, we get

$2y = 12 \Rightarrow y = 6$

$\therefore$ Required point = (0, 6).

**68.** (3) $\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta PQR} = \frac{(AB)^2}{(PQ)^2}$

$\Rightarrow \frac{121}{64} = \frac{(AB)^2}{(12)^2}$

$\Rightarrow (AB)^2 = \frac{121 \times 144}{64}$

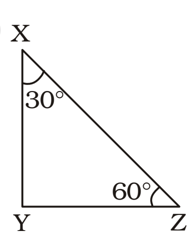
$\Rightarrow AB = \sqrt{\frac{121 \times 9}{4}} = \frac{33}{2}$

= 16.5 cm.

**69.** (3) $\tan 60° + \text{cosec } 60°$

$= \sqrt{3} + \frac{2}{\sqrt{3}} = \frac{3 + 2}{\sqrt{3}} = \frac{5}{\sqrt{3}}$

**70.** (4)




$\angle X = 90° - 60° = 30°$

$\frac{1}{\sqrt{2}} \sec X = \frac{1}{\sqrt{2}} \sec 30°$

$= \frac{1}{\sqrt{2}} \times \frac{2}{\sqrt{3}} = \frac{2}{\sqrt{6}}$

**71.** (2) $\text{cosec}\ \theta = \frac{17}{8}$

$\therefore \sin \theta = \frac{8}{17}$

$\therefore \cos \theta = \sqrt{1 - \sin^2 \theta}$

$= \sqrt{1 - \left(\frac{8}{17}\right)^2} = \sqrt{1 - \frac{64}{289}}$

$= \sqrt{\frac{289 - 64}{289}} = \sqrt{\frac{225}{289}} = \frac{15}{17}$

**72.** (2) In terms of Gross Domestic product, country C is the third biggest country.

**73.** (1) Required difference

50 – 30 = 20 billion USD.

**74.** (1)

$\frac{\text{Gross Domestic product of country E}}{\text{Total Gross Domestic product of countries A, C and F}}$

$= \frac{90}{30 + 70 + 50} = \frac{90}{150}$

$= \frac{3}{5} = 3 : 5$

**75.** (3) Let annual Gross Domestic product 10 years, ago be Rs. $x$ billion USD.

$\therefore$ 150% of $x = 360$

$\Rightarrow x \times \frac{150}{100} = 360$

$\Rightarrow x = \frac{360 \times 100}{150}$

= 240 billion USD

**76.** (2) Here, the error lies in the wrong use of preposition. Use 'from' in place of 'of'.

**From (preposition)** = indicates the source of something.

**Look at the sentence :**

Blood dripped from his wound.

**77.** (3) Use 'under' in place of down.

**Under (preposition)** = extending or directly below; in a position below or beneath something.

**Down (preposition)** = from a higher to a lower point of something.

**Tuck** = to put something into a small space to keep it safe.

**Look at the sentence :**

He sat with his legs tucked up under him.

Hence, tucked up under him ..... should be used.

**78.** (4) **Pilfer (Verb)** = steal.

**Prefer (Verb)** = choose; select.

**Lifter (Noun)** = a person/thing that lifts.

**Differ (Verb)** = to be different.

**79.** (3) **Sane (Adjective)** = wise; intelligent.

**Insane (Adjective)** = unwise; foolish.

**Vain (Adjective)** = conceited; self-centred.

**Main (Adjective)** = chief; key.

**80.** (2) **Piquancy/flavouring (Noun)** = spiciness; savouriness.

**Look at the sentence :**

The tange soy dip gave them a slightly Asian piquancy.

**Bland/insipid (Adjective)** = tasteless; flavourless.

**Tedious (Adjective)** = boring; monotonous.

**81.** (4) **Confront/accost (Verb)** = approach; meet.

**Look at the sentence :**

300 policemen confronted an equal number of supporters.

**Avoid/dodge (Verb)** = keep away from; stay away from.

**Yield (Verb)** = give in; surrender.

**82.** (1) **Egghead/savant/pundit (Noun)** = intellectual; scholar; a highly studious person.

**Academic (Adjective)** = educational; scholastic.

**Amateur (Noun)** = non-professional; non-specialist.

**Look at the sentence :**

It takes five years for a top amateur to become a real tour de France rider.

**83.** (3) **Indict/impeach/arraign (Verb)** = charge with; accuse of; file charges against.

**Look at the sentence :**

He was indicted for fraud.

**Censure (Verb)** = express severe disapproval of someone/something.

**Exonerate (Verb)** = absolve; clear; acquit.

**Look at the sentence :**

An inquiry exonerated those involved.

**84.** (3) **to have tried to do something** which is too difficult.

**Look at the sentence :**

⇒ Don't bite off more than you can chew by accepting the job in Alaska during winters.

**85.** (2) **A book no longer available** from the publisher.

**Look at the sentence :**

The title I want is out of print.

**86.** (1) Here, to is superfluous. In this kind of a sentence, 'to' is not needed.

**Look at the sentences :**

⇒ I am having tea.

⇒ She is having fun at the theme park.

**87.** (1) **would be doing** : progressive form which states about action of the cavalry in the future or in the past or in the present. It is a polite way of asking.

**88.** (1) **Offbeat (Adjective)** = (in music) not coinciding with the beat.

**Divergent (Adjective)** = differing; varying.

**Contrary (Adjective)** = opposite; opposing.

**89.** (2) **Zealot (Noun)** = fanatic; enthusiast.

**Adherent (Noun)** = follower; supporter.

**Disciple (Noun)** = pupil of a teacher/leader/philosopher.

**90.** (3) **Dither** = to be indecisive; hesitate.

**Look at the sentence :**

Stop dithering and choose which one you want!

**91.** (4) **Throttle (Verb)** = choke; strangulate.

**Look at the sentence :**

She was sorely tempted to throttle him.

**94.** (3) It is active voice of present continuous tense.

Its passive voice is formed as follows :

Subject + is being/am being/are being + $V_3$ + by + obj...

**95.** (3) It is direct speech of an assertive sentence.

Its indirect speech is formed as follows :

⇒ 'said to' changes to told

⇒ connective 'that' is used

⇒ pronoun changes as per $\frac{\text{SON}}{1\ 2\ 3}$

⇒ 'Has' changes to Had.

**96.** (4) It is simple present tense. So, 'gives' is apt and appropriate. Moreover, the entire paregraph states a universal truth.

**97.** (2) 'will' is a modal verb and is always followed by $V_1$, *i.e.* gain (not gained).

**98.** (2) The subject (All standing poses) is plural. So, the verb will also be plural.

Singular subject → singular verb

Plural subject → plural verb

**99.** (2) ⇒ the + comparative degree ... the + comparative degree

The higher you go, the cooler it becomes.

**100.** (3) so that — used in a subordinate clause for showing purpose.

⇒ We eat so that we may live.

Work hard so that you may get through the examinations.

❑❑❑

SET 25

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 17.08.2017 (Shift-III)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :

Tongue : Taste : : Nose : ?

(1) Smell (2) Face
(3) Touch (4) Chin

**2.** Select the related letters from the given alternatives :

FDH : LJN : : RPT : ?

(1) XYZ (2) WUY
(3) XVZ (4) SUV

**3.** Select the related number from the given alternatives :

39 : 52 : : 51 : ?

(1) 53 (2) 40
(3) 68 (4) 38

**4.** Select the odd word from the given alternatives :

(1) Nylon (2) Wool
(3) Silk (4) Cotton

**5.** Select the odd letters from the given alternatives :

(1) ZXV (2) GDA
(3) NKH (4) URO

**6.** Select the odd number from the given alternatives :

(1) 15 (2) 20
(3) 40 (4) 60

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :

Pension, Aptitude, Captain, Tropical, Survive, ?

(1) Parrot (2) Apply
(3) Trap (4) Tetrapod

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :

DEC, HIG, LMK, PQO, TUS, ?

(1) XYZ (2) WXY
(3) XYW (4) YZA

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :

100, –20, 4, ?, 0.16, –0.032

(1) 0.8 (2) 1
(3) –1 (4) –0.8

**10.** Chirag's birthday is on Thursday 1st June. On what day of the week will be Reyansh's birthday in the same year if Reyansh was born on 3rd December?

(1) Wednesday
(2) Sunday
(3) Friday
(4) Saturday

**11.** The weights of 4 boxes are 20, 40, 50 and 30 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?

(1) 140 (2) 130
(3) 90 (4) 120

**12.** From the given words, select the word which cannot be formed using the letters of the given word.

**ORDINALS**

(1) DINAR (2) ADORN
(3) SALON (4) IDEAL

**13.** If QUICKLY is coded as OSGAIJW, then how will HUE be coded as?

(1) ZMA (2) FSC
(3) HZK (4) HNI

**14.** In a certain code language,'+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?

$42 \times 7 \div 7 + 9 - 62 = ?$

(1) 5 (2) 87
(3) 22 (4) 2

**15.** If 17 @ 1 =8; 9 @ 1 = 4; 6 @ 4 = 1; then what is the value of 8 @ 2 = ?

(1) 3 (2) 26
(3) 23 (4) 47

**16.** Select the missig number from the given responses

| 23 | 114 | 204 |
|---|---|---|
| 45 | 25 | 36 |
| 68 | 89 | ? |

(1) 157 (2) 168
(3) 21 (4) 15

**17.** A truck travels 36 km North, then it turns West and travels 9 km, then it turns South and travels 50 km, then it turns to its left and travels 9 km. Where is it now with reference to its starting position?

(1) 14 km North
(2) 86 km South
(3) 86 km North
(4) 14 km South

**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.

**Statements :**

Some clever are intelligent.

No intelligent is smart.

**Conclusions :**

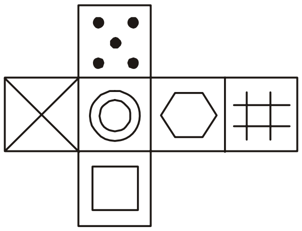
I. Some intelligent are clever.

II. Some smart are clever.

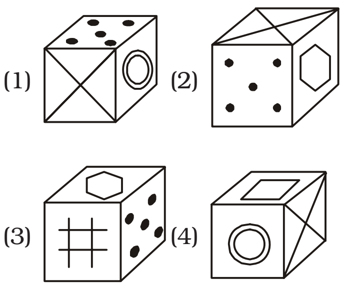
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

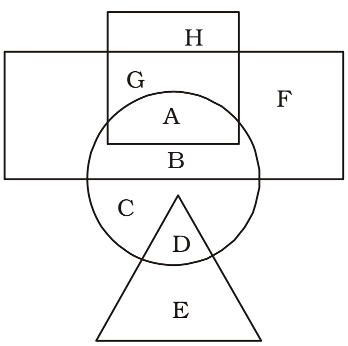
**Question Figure :**



**Answer Figures :**



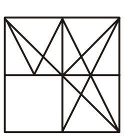

**20.** In the following Figure, square represents Dietitians, triangle represents Botanists, circle represents Psychologists and rectangle represents Indians. Which set of letters represents Psychologists who are not Botanists?



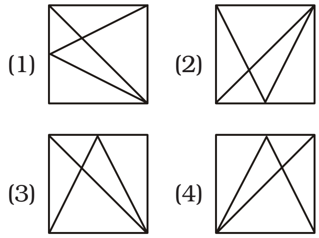

(1) D, G, A (2) A, B, C
(3) F, E, C (4) H, B, D

**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

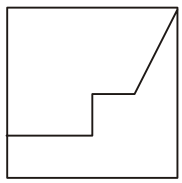


**Answer Figures :**

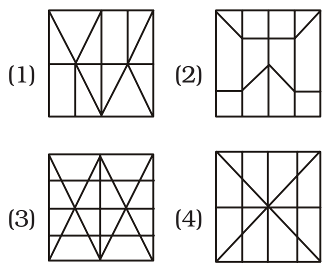



**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

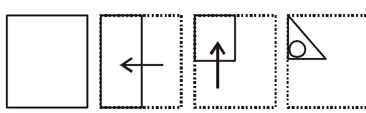


**Answer Figures :**

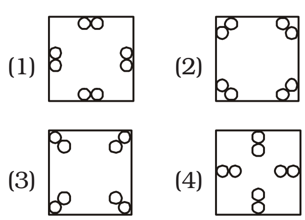



**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures :**

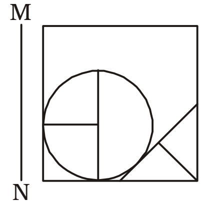


**Answer Figures :**

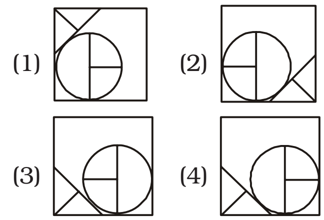



**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 20, 34 etc and 'Z' can be represented by 67, 83 etc. Similarly, you have to identify the set for the word **'PURE'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | G | K | D | D | G |
| 1 | A | J | F | E | J |
| 2 | K | F | H | F | A |
| 3 | D | G | M | C | K |
| 4 | C | L | H | J | B |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | O | T | V | U | R |
| 6 | Q | U | Z | Y | T |
| 7 | V | Y | X | Q | N |
| 8 | Y | R | X | Z | P |
| 9 | N | U | Y | U | O |

(1) 89, 96, 86, 13
(2) 34, 34, 56, 79
(3) 41, 44, 67, 96
(4) 01, 10, 79, 57

## GENERAL AWARENESS

**26.** In a market system, the central problems regarding how much and what to produce are solved through the coordination of economic activities brought about by ________ signals.
(1) Supply
(2) Demand
(3) Price
(4) Stock Market

**27.** ______ says that the marginal product of a factor input initially rises with its employment level. But after reaching a certain level of employment, it starts falling.
(1) Law of diminishing marginal product
(2) Law of variable proportions
(3) The Short Run
(4) The Long Run

**28.** Constituent Assembly of India was founded in the year _____.
(1) 1940 (2) 1946
(3) 1947 (4) 1950

**29.** Which Fundamental Right in the Indian Constitution allows citizens to move the court if they believe that any of their Fundamental Rights have been violated by the State?
(1) Cultural and Educational Rights
(2) Right to Constitutional Remedies
(3) Right against Exploitation
(4) Right to Freedom of Religion

**30.** During their rule the British persuaded or forced cultivators in Punjab to grow ______.
(1) Jute
(2) Tea
(3) Sugarcane
(4) Wheat

**31.** The Red fort in Delhi was the residence of emperors of which dynasty in the 16th century?
(1) Rajput (2) Khalji
(3) Tughluq (4) Mughal

**32.** India has a land boundary of about _______ km.
(1) 5200 (2) 10200
(3) 15200 (4) 20200

**33.** The Patkai hills belong to which mountain ranges?
(1) Himachal
(2) Purvanchal
(3) Himgiri
(4) Hindu Kush

**34.** RBCs are formed in the in the adults.
(1) blue bone marrow
(2) red bone marrow
(3) white bone marrow
(4) black bone marrow

**35.** The later (second) formed primary xylem elements are called
(1) Protoxylem
(2) Metaxylem
(3) Xylem parenchyma
(4) Xylem fibres

**36.** Which of the following does not hold true for Animal belonging to Phylum Chordate?
(1) Notochord present
(2) Pharynx perforated by gill slits.
(3) Heart is dorsal (if present)
(4) A post-anal part (tail) is present

**37.** In science a push or pull of an object is called _______ .
(1) Pick (2) Lift
(3) Force (4) Shut

**38.** There are how many vocal cords in the human voice box?
(1) One (2) Two
(3) Three (4) Four

**39.** The attribute ______ specifies (in pixels) the distance between two adjacent cells.
(1) Width
(2) Height
(3) Cellpadding
(4) Cellspacing

**40.** What is the name of the acid in an ant's sting?
(1) Acetic acid
(2) Citric acid
(3) Formic acid
(4) Lactic acid

**41.** Which base is present in soap?
(1) Sodium hydroxide
(2) Silicon dioxide
(3) Calcium hydroxide
(4) Ammonium hydroxide

**42.** Any undesirable change in physical, chemical or biological characteristics of air, land, water or soil is called?
(1) Greenhouse effect
(2) Solid wastes
(3) Pollution
(4) Deforestation

**43.** _______ scheme was launched by the Central Government to create awareness about the cleanliness of the children.
(1) Sukanya Samridhi Yojana
(2) Bal Swachta Mission
(3) Pradhan Mantri Jan Dhan
(4) Beti Bachao Beti Padhao Yojana

**44.** Who discovered the colour photography?
(1) Robert Noyce
(2) Enrico Fermi
(3) John Logie Baird
(4) James Clerk Maxwell

**45.** Who was the host nation of 2014 FIFA World Cup?
(1) Argentina
(2) Netherlands
(3) Germany
(4) Brazil

**46.** Jama Masjid of Delhi was built by?
(1) Akbar
(2) Humayun
(3) Babar
(4) Shah Jahan

**47.** Which of the following won the Oscars 2017 Best Picture?
(1) La La Land
(2) Moonlight
(3) Arrival
(4) Fences

**48.** Which of the statements given below are correct?
1. The author of the novel 'Half of a Yellow Sun' is Chimamanda Ngozi Adichie.
2. The author of the novel 'Middlesex' is Jeffrey Eugenides.
3. The author of the novel 'Missile Gap' is China Mieville.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** Which company acquired Linkedln For $ 26.2 Billion?
(1) Apple (2) Facebook
(3) Microsoft (4) IBM

**50.** Which of the following rivers flows from India to Pakistan?
(1) Satluj (2) Ghaghra
(3) Betwaferr (4) Tapi cinft

## QUANTITATIVE APTITUDE

**51.** What least number must be added to 4131, so that the sum is completely divisible by 19?
(1) 10 (2) 11
(3) 9 (4) 12

**52.** A, B and C can finish a job working alone in 12, 8 and 24 days respectively. In how many days they can finish the job if they work together?
(1) 5 (2) 6
(3) 4 (4) 3

**53.** What is the area (in sq. cm.) of an equilateral triangle of side 14 cm?
(1) $49\sqrt{3}$ (2) $98\sqrt{3}$
(3) $\left(\frac{49}{2}\right)\sqrt{3}$ (4) $\left(\frac{49}{4}\right)\sqrt{3}$

**54.** What is the effective discount (in %) on two successive discounts of 20% and 10%?
(1) 30 (2) 32
(3) 35 (4) 28

**55.** A profit of Rs 1,03,500 has to be divided among three partners A, B and C in the ratio 11:7:5. How much amount (in Rs.) does B get?
(1) 22,500 (2) 49,500
(3) 50,500 (4) 31,500

**56.** The average weight of P, Q and R is 45 kg. If the average weight of P and Q be 36.5 kg and that of Q and R be 52 kg, then what is the weight (in kg.) of Q?
(1) 42 (2) 44
(3) 46 (4) 48

**57.** A shopkeeper by selling 21 items earns a profit equal to the selling price of 1 item. What is his profit percentage?
(1) 5.5 (2) 2.2
(3) 2 (4) 5

**58.** What is the value of 10% of 150% of 400?
(1) 600 (2) 50
(3) 500 (4) 60

**59.** To cover a distance of 144 km. in 3.2 hours what should be the average speed of the car in metres/second?
(1) 12.5 (2) 10
(3) 7.5 (4) 15

**60.** If in 2 years at simple interest the principal increases by 18%, what will be the compound interest (in Rs.) earned on Rs. 7000 in 3 years at the same rate?
(1) 1865.2 (2) 2065.2
(3) 1965.2 (4) 1765.2

**61.** If $\frac{x}{3} - \frac{\left[\left(5\frac{7x}{5} - \frac{4}{3}\right)\right]}{2} = -\frac{x}{6}$, then what is the value of $x$?
(1) $\frac{10}{9}$ (2) $-\frac{10}{9}$
(3) $-\frac{9}{10}$ (4) $\frac{9}{10}$

**62.** If $a^3 + b^3 = 19$ and $a + b = 1$, then what is the value of $ab$?
(1) 5 (2) – 6
(3) 7 (4) – 9

**63.** A fraction is greater than its reciprocal by $\frac{72}{77}$. What is the fraction?
(1) $\frac{7}{11}$ (2) $\frac{11}{7}$
(3) $\frac{4}{7}$ (4) $\frac{7}{4}$

**64.** What is the sum of the first 12 terms of an arithmetic progression if the first term is -19 and last term is 36?
(1) 192 (2) 230
(3) 102 (4) 214

**65.** What is the reflection of the point (–2, 5) in the line $x = -1$?
(1) (–2. –7) (2) (0, 5)
(3) (2, 5) (4) (–2, 7)

**66.** Point P is the midpoint of segment AB. The co-ordinates of P are (3, 1) and that of B are (5, –4). What are the co-ordinates of point A?
(1) (–1, 7) (2) (1, –7)
(3) (1, 6) (4) (–1, –7)

**67.** What is the slope of the line perpendicular to the line passing through the points (–5, 1) and (–2, 0)?
(1) –3 (2) 3
(3) $\frac{-1}{3}$ (4) $\frac{1}{3}$

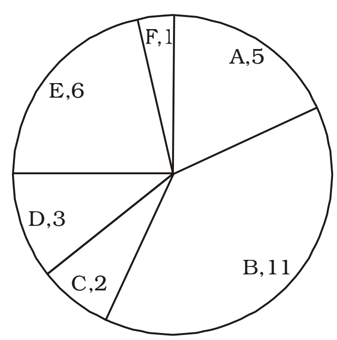
**68.** $\Delta$ABC is similar to $\Delta$PQR. If ratio of perimeter of $\Delta$ABC and perimeter of $\Delta$PQR is 5 : 9 and PQ = 45 cm, then the length of AB (in cm.) is
(1) 15 (2) 20
(3) 25 (4) 16

**69.** What is the value of
$\left(\frac{1}{\sqrt{2}}\right)$ cot 45° + $\left(\frac{1}{\sqrt{3}}\right)$ cosec 60°?
(1) $\frac{\left(\sqrt{6}+1\right)}{\sqrt{3}}$ (2) $\sqrt{3}$
(3) $\frac{\left(1+3\sqrt{2}\right)}{\sqrt{3}}$ (4) $\frac{\left(3+2\sqrt{2}\right)}{3\sqrt{2}}$

**70.** $\Delta$ABC is right angled at B. If m$\angle$A = 60° then what is the value of sec C . sin A?
(1) $\frac{2}{\sqrt{3}}$ (2) $\frac{\sqrt{3}}{2}$
(3) $\frac{2}{3}$ (4) 1

**71.** If tan $\theta = \frac{7}{24}$, then what is the value of sec $\theta$?
(1) $\frac{24}{25}$ (2) $\frac{24}{7}$
(3) $\frac{25}{7}$ (4) $\frac{25}{24}$

**Directions (72–75) :** The following pie–chart shows the number of tickets sold (in 1000s) per month by six different airlines (A, B, C, D, E and F). Study the diagram and aswer the followig questions.



**72.** Which Airline sold the second highest number of tickets?
(1) E (2) A
(3) B (4) D

**73.** Airline E sold how many more tickets than that of Airline A?
(1) 25 (2) 16
(3) 20 (4) 10

**74.** The ratio of the number of tickets sold by Airlines A and D to the number of tickets sold by Airline E is
(1) 3 : 4 (2) 4 : 3
(3) 2 : 3 (4) 4 : 1

**75.** If the price of an Airline ticket is Rs. 7000 then by what amount, monthly revenue (in Rs. Millions) from sale of tickets of Airline B is greater than that of Airline E?
(1) 77 (2) 7
(3) 35 (4) 42

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** She was so (1)/ near to (2)/ achieving her goal. (3)/No Error (4)

**77.** He watched as fights (1)/ broke out (2)/ along the city. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Everyone was pleased to learn the actor would ______ his role as the captivating pirate.
(1) reprise (2) rescue
(3) save (4) free

**79.** The diamond necklace was _______ too extravagant for a simple dinner party.
(1) distance (2) long
(3) very much (4) far

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Fallacy**
(1) Conformity
(2) Surety
(3) Bias
(4) Evidence

**81. To reproach**
(1) To commend
(2) To laud
(3) To exonerate
(4) To admonish

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Veneration**
(1) Adoration (2) Contempt
(3) Reverence (4) Admiration

**83. Impugnable**
(1) Dicey
(2) Debatable
(3) Indubious
(4) Hazy

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To hit the nail on the head**
(1) To take out frustration by beating a person
(2) To make a wrong decision
(3) To find exactly the right answer
(4) To unwittingly fall into a trap

**85. On thin ice**
(1) To keep failing after repeated efforts
(2) To endure a harsh winter
(3) To keep one's cool even in a tough situation
(4) In a precarious or risky situation

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** All **(was surprising)** to find that he was not with them.
(1) was surprised
(2) were surprised
(3) is surprised
(4) No Improvement

**87.** Read in order **(become)** wise.
(1) to have to be
(2) to have become
(3) to become
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Showing strong feeling**
(1) Meek (2) Vehement
(3) Apathetic (4) Impotent

**89. A sheath for the blade of a sword**
(1) Scabbard (2) Denude
(3) Divulge (4) Expose

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. select the correctly spelt word.

**90.** (1) Litegants (2) Litigents
(3) Litigants (4) Litegents

**91.** (1) Stoically (2) Stoicaly
(3) Stoecally (4) Stoecaly

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. The space in front of the large**
X. hut was empty, but
Y. placed several stools
Z. before it were
(1) XYZ (2) XZY
(3) ZYX (4) ZXY

**93. From our common experience**
X. of the relation of the
Y. mental he starts out
Z. physical and the
(1) XYZ (2) XZY
(3) ZYX (4) ZXY

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**The maid vacuums and dusts the house every day.**

(1) Every day the house is vacuumed and dusted by the maid.
(2) Every day the house were vacuumed and dusted by the maid.
(3) Dusting and Vacuuming of the house every day is being done by the maid.
(4) Dusting and Vacuuming of the house every day was being done by the maid.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**The spectators said, "Bravo! Good hit, Jay!"**

(1) The spectators applauded Jay for his good hit.
(2) The spectators applauded Jay saying, bravo, good hit Jay.
(3) The spectators applaud Jay for his good hit.
(4) The spectators applaud Jay saying, bravo, good hit Jay.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

And then, a few glorious minutes **(96)**, it was time to reluctantly head ashore. **(97)** time, the strokes were more fluid, the movements more relaxed. I turned back one last time **(98)** hello to a clown fish, the reason why I came to the Andamans. As I watched, it played hide-and-seek **(99)** a sea anemone, before frisking away. Suddenly, I realised a kinship with the blue waters **(100)** the Bay of Bengal.

**96.** (1) late (2) later (3) lately (4) latest
**97.** (1) These (2) Those (3) At (4) This
**98.** (1) to say (2) said (3) saying (4) says
**99.** (1) to (2) for (3) from (4) with
**100.** (1) for (2) from (3) to (4) of

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (3) | **3.** (3) | **4.** (1) |
| **5.** (1) | **6.** (1) | **7.** (4) | **8.** (3) |
| **9.** (4) | **10.** (2) | **11.** (2) | **12.** (4) |
| **13.** (2) | **14.** (1) | **15.** (1) | **16.** (2) |
| **17.** (4) | **18.** (1) | **19.** (2) | **20.** (2) |
| **21.** (4) | **22.** (3) | **23.** (1) | **24.** (4) |
| **25.** (1) | **26.** (3) | **27.** (2) | **28.** (2) |
| **29.** (2) | **30.** (4) | **31.** (4) | **32.** (3) |
| **33.** (2) | **34.** (2) | **35.** (2) | **36.** (3) |
| **37.** (3) | **38.** (2) | **39.** (4) | **40.** (3) |
| **41.** (1) | **42.** (3) | **43.** (2) | **44.** (4) |
| **45.** (4) | **46.** (4) | **47.** (2) | **48.** (1) |
| **49.** (3) | **50.** (1) | **51.** (2) | **52.** (3) |
| **53.** (1) | **54.** (4) | **55.** (4) | **56.** (1) |
| **57.** (4) | **58.** (4) | **59.** (1) | **60.** (2) |
| **61.** (1) | **62.** (2) | **63.** (2) | **64.** (3) |
| **65.** (2) | **66.** (3) | **67.** (2) | **68.** (3) |
| **69.** (4) | **70.** (4) | **71.** (4) | **72.** (1) |
| **73.** (3) | **74.** (2) | **75.** (3) | **76.** (2) |
| **77.** (3) | **78.** (1) | **79.** (4) | **80.** (3) |
| **81.** (4) | **82.** (2) | **83.** (3) | **84.** (3) |
| **85.** (4) | **86.** (2) | **87.** (3) | **88.** (2) |
| **89.** (1) | **90.** (3) | **91.** (1) | **92.** (2) |
| **93.** (2) | **94.** (1) | **95.** (1) | **96.** (2) |
| **97.** (4) | **98.** (1) | **99.** (4) | **100.** (4) |

## EXPLANATIONS

**1.** (1) Tongue is the soft organ in the mouth, used in tasting, swallowing etc. Tongue is a sense organ which experiences tastes. Similarly, nose is a sense organ which detects smell.

**2.** (3)

F D H : L J N : : R P T : X V Z

$F \xrightarrow{+6} L$, $D \xrightarrow{+6} J$, $H \xrightarrow{+6} N$; $R \xrightarrow{+6} X$, $P \xrightarrow{+6} V$, $T \xrightarrow{+6} Z$

**3.** (3)

13 × 3 : 13 × 4 : : 17 × 3 : 17 × 4

$3 \xrightarrow{+1} 4$; $3 \xrightarrow{+1} 4$

⇒ 39 : 52 : : 51 : 68

**4.** (1) Except Nylon, all others are natural fibres.

**5.** (1) $G \xrightarrow{-3} D \xrightarrow{-3} A$

$N \xrightarrow{-3} K \xrightarrow{-3} H$

$U \xrightarrow{-3} R \xrightarrow{-3} O$

But,

$Z \xrightarrow{-2} X \xrightarrow{-2} V$

**6.** (1) Except the number 15, all others are even numbers.

**7.** (4) The series is based on the seven-and eight-lettered words. Each seven lettered word is followed an eight–lettered word.

**8.** (3)

$D \xrightarrow{+4} H \xrightarrow{+4} L \xrightarrow{+4} P \xrightarrow{+4} T \xrightarrow{+4} \boxed{X}$

$E \xrightarrow{+4} I \xrightarrow{+4} M \xrightarrow{+4} Q \xrightarrow{+4} U \xrightarrow{+4} \boxed{Y}$

$C \xrightarrow{+4} G \xrightarrow{+4} K \xrightarrow{+4} O \xrightarrow{+4} S \xrightarrow{+4} \boxed{W}$

**9.** (4)

100 , –20 , 4 , $\boxed{-0.8}$, 0.16 , –0.032

(each term $\times\left(\frac{-2}{10}\right)$)

**10.** (2) 1st June = Thursday

Number of days from 1st June to 3rd December

= 29 + 31 + 31 + 30 + 31 + 30 + 3

= 185 days

= 26 weeks + 3 odd days

∴ 3rd December = Thursday + 3 = Sunday

**11.** (2) Possible weights of combinations of boxes :

(i) 20 + 40 = 60
(ii) 20 + 50 = 70
(iii) 20 + 30 = 50
(iv) 40 + 50 = 90
(v) 40 + 30 = 70
(vi) 50 + 30 = 80
(vii) 20 + 40 + 50 = 110
(viii) 20 + 40 + 30 = 90
(ix) 20 + 50 + 30 = 100
(x) 40 + 50 + 30 = 120
(xi) 20 + 40 + 50 + 30 = 140

**12.** (4) There is no 'E' letter in the given word. Therefore, the word IDEAL cannot be formed.

O [R D I N A] L S ⇒ DINAR

[O R D] I [N A] L S

⇒ ADORN

[O] R D I [N A L S]

⇒ SALON

**13.** (2) Q U I C K L Y

(each −2)

O S G A I J W

Therefore,

H U E

(each −2)

F S C

**14.** (1)

| + ⇒ × | − ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ − |

$42 \times 7 \div 7 + 9 - 62 = ?$

$\Rightarrow ? = 42 \div 7 - 7 \times 9 + 62$

$\Rightarrow ? = 6 - 63 + 62 = 6 - 1 = 5$

**15.** (1) 17 @ 1 = (17 – 1) ÷ 2

= 16 ÷ 2 = 8

9 @ 1 = (9 – 1) ÷ 2

= 8 ÷ 2 = 4

6 @ 4 = 1

= (6 – 4) ÷ 2

= 2 ÷ 2 = 1

Therefore,

8 @ 2 = (8 – 2) ÷ 2

= 6 ÷ 2 = 3

**16.** (2) First Column

23 + 45 = 68

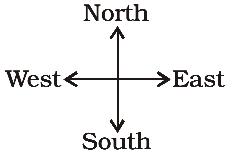
Second Column

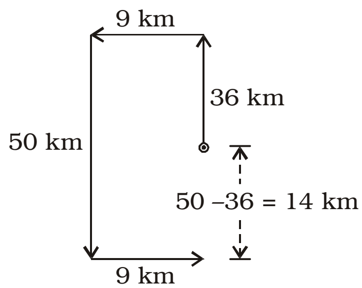
114 – 25 = 89

Third Column

204 – 36 = 168

**17.** (4)




Now, truck is 14 km south of its starting position.

**18.** (1) First Premise is Particular Affirmative (I–type).

Second Premise is Universal Negative (E–type).

Some clever are intelligent.

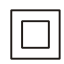
No intelligent is smart.

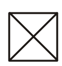
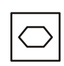
I + E ⇒ O–type of Conclusion

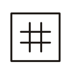
"Some clever are not smart."

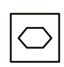
Conclusion I is the Converse of the first Premise.

**19.** (2) After folding the figure :

lies opposite .

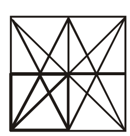
 lies opposite .

lies opposite .

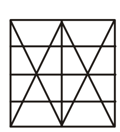
cannot be on the face adjacent to . Therefore, the cube given in the option (2) cannot be formed.

**20.** (2) Psychologists who are not Botanists can be represented by the letters present in the circle but outside the triangle. Such letters are A, B and C.

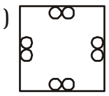
**21.** (4)



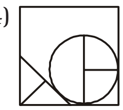
**22.** (3)



**23.** (1)



**24.** (4)



**25.** (1) P = 89

U = 58, 66, 96, 98

R = 59, 86

E = 13

| Option | P | U | R | E |
|---|---|---|---|---|
| (1) | 89 | 96 | 86 | 13 |
| (2) | 34 | 34 | 56 | 79 |
| (3) | 41 | 44 | 67 | 96 |
| (4) | 01 | 10 | 79 | 57 |

**26.** (3) A price signal is information conveyed to consumers and producers, via the price-charged for a product or service, which provides a signal to increase or decrease supply or demand. Price acts as a signal for shortages and surpluses which help firms and consumers respond to changing market conditions.

**27.** (2) The law of variable proportions (or the law of diminishing returns) that it refers to the behaviour of output as the quantity of one factor is increased, keeping the quantity of other factors fixed and further it states that the marginal product and average product will eventually decline.

**28.** (2) The constituent assembly was formed on the recommendation of the Cabinet Mission which visited India in 1946. The Constituent Assembly met for the first time in New Delhi on 9 December, 1946 in the Constitution Hall which is now known as the Central Hall of Parliament House.

**29.** (2) Article 32 provides the right to Constitutional remedies which means that a person has right to move to Supreme Court (and High Courts also) for get-

ting his fundamental rights protected. While Supreme Court has power to issue writs under Article 32, High Courts have been given same powers under Article 226.

**30.** (4) The British forced Indian farmers to produce jute in Bengal, tea in Assam, sugarcane in Uttar Pradesh, wheat in Punjab, cotton in Maharashtra and Punjab and rice in Madras.

**31.** (4) In 1638 Mughal King Shahjahan transferred his capital from Agra to Delhi and laid the foundations of Shahjahanabad, the seventh city of Delhi Of its fourteen gates, the important ones are the Mori, Lahori, Ajmeri, Turkman, Kashmiri and Delhi gates, some of which have already been demolished. His famous citadel, the Lal-Qila, or the Red Fort, lying at the town's northern end on the right bank or the Yamuna and south of Salimgarh, was begun in 1639 and completed after nine years.

**32.** (3) India has 15106.7 Km of land border running through 92 districts in 17 States and a coastline of 7516.6 Km touching 13 States and Union Territories (UTs). India also has a total of 1197 islands accounting for 2094 Km of additional coastline.

**33.** (2) The patkai mountain range also known as Purvanchal Range, one of the eight mountain range in India and the major of India's North Eastern states. Patkai Range is consist of three major hills The Patkai-Bum,the Garo-Khasi-Jaintia and Lushai Hills. Indian states along the Patkai range are Nagaland, Meghalaya, Mizoram and Manipur.

**34.** (2) There are two types of bone marrow : red marrow (also known as myeloid tissue) and yellow marrow. Red blood cells, platelets and most white blood cells arise inred marrow; some white blood cells develop in yellow marrow. The color of yellowmarrow is due to the much higher number of fat cells.

**35.** (2) Primary xylem is formed during primary growth from procambium. It includes protoxylem and metaxylem. Metaxylem develops after the protoxylem but before secondary xylem. Metaxylem has wider vessels and tracheids than protoxylem.

**36.** (3) Phylum Chordata exhibits a distinguishable character from all other phyla viz. a notochord. All chordates are characterized by four features at different stages of their life: Notochord; Dorsal nerve cord; Pharyngeal slits and Postanal tail.

**37.** (3) A force is a push or pull upon an object resulting from the object's interaction with another object. Whenever there is an interaction between two objects, there is a force upon each of the objects. The unit of measure for force is the newton which is abbreviated as "N". One newton is the force needed to accelerate one gram of mass by one centimeter per second squared.

**38.** (2) In humans, voice is produced by the larynx or voice box present in the upper part of human body. Larynx is present near the upper end of windpipe. Two vocal cords present across the larynx stretch in such a way that it leaves a narrow space between them for the passage of air.

**39.** (4) The cellspacing attribute specifies the space, in pixels, between cells.

**40.** (3) Formic acid is the simplest member of the carboxylic acid family. It's also known as methanoic acid. It is present in the sprayed venom of some ant species and in the secretion released from some stinging nettles.

**41.** (1) Sodium Hydroxide (NaOH), also known as lye, is an essential ingredient in the soap making process. When sodium hydroxide beads or flakes are mixed with a liquid, a lye solution is created. This solution, when mixed with fats and oils, will cause a chemical reaction called saponification.

**42.** (3) Pollution is an undesirable change in the physical, chemical or biological characteristics of air, water and soil that may harmfully affect the life or create potential health hazard of any living organism. Pollution is thus direct or indirect change in any component of the biosphere that is harmful to the living components and in particular undesirable for man.

**43.** (2) The Bal Swachhta Mission is a part of the nationwide sanitation initiative of 'Swachh Bharat Mission' launched by the Prime Minister on 2nd October, 2014. The nationwide Bal Swachhta Mission will have the following six themes : Clean Anganwadis; Clean Surroundings e.g. Playgrounds; Clean Self (Personal Hygiene/Child Health); Clean Food; Clean Drinking Water and Clean Toilets.

**44.** (4) The foundation of virtually all practical color processes, the three-color method was first suggested in an 1855 paper by Scottish physicist James Clerk Maxwell, with the first color photograph produced by Thomas Sutton for a Maxwell lecture in 1861.

**45.** (4) The 2014 FIFA World Cup took place in Brazil from 12 June to 13 July, 2014. In the final, Germany defeated Argentina to win the tournament

and secure the country's fourth world title, the first after the German reunification in 1990, when as West Germany they also beat Argentina in the World Cup final.

**46.** (4) Jama Masjid was built by Mughal emperor Shah Jahan between 1644 and 1656 at a cost of 1 million rupees, and was inaugurated by an imam from Bukhara, present-day Uzbekistan. The mosque was completed in 1656 AD with three great gates, four towers and two 40 m high minarets constructed of strips of red sandstone and white marble.

**47.** (2) Moonlight became the first film with an all-black cast, the first LGBT film, and the second lowest-grossing film domestically to win the Oscar for Best Picture. The film's editor, Joi McMillon, became the first black woman to be nominated for an editing Oscar (alongside co-editor Nat Sanders), and Ali became the first Muslim to win an acting Oscar.

**48.** (1) Half of a Yellow Sun is a novel by Nigerian author Chimamanda Ngozi Adichie.

- Middlesex is a Pulitzer Prize-winning novel by Jeffrey Eugenides.
- Missile Gap is a science fiction novel by Charles Stross.

**49.** (3) LinkedIn is a business- and employment-oriented social networking service that operates via websites and mobile apps. On June 13, 2016, Microsoft announced plans to acquire LinkedIn for $26.2 billion. The acquisition was completed on December 8, 2016.

**50.** (1) Satluj rises from beyond Indian borders in the Southern slopes of the Kailash mountain near Mansarover lake from Rakas lake, as Longcchen Khabab river ( in Tibet ). It is the largest among the five rivers of Himachal Pradesh. The Satluj finally drains into the Indus in Pakistan.

**51.** (2) On dividing 4131 by 19, remainder = 8

So, required number = 19 – 8 = 11

On adding 11 to 4131, the number 4142 is completely divisible by 19.

**52.** (3) One day's work of A, B and C

$= \frac{1}{12} + \frac{1}{8} + \frac{1}{24}$

$= \frac{2+3+1}{24} = \frac{6}{24} = \frac{1}{4}$

So, working together they will complete the work in 4 days.

**53.** (1) Area of equilateral triangle

$= \frac{\sqrt{3}}{4} \times (\text{side})^2$

$= \frac{\sqrt{3}}{4} \times (14)^2$

$= \frac{\sqrt{3}}{4} \times 196 = 49\sqrt{3}$ sq. cm.

**54.** (4) Effective discount

$= \left(x + y - \frac{xy}{100}\right)\%$

$= \left(20 + 10 - \frac{20 \times 10}{100}\right)\%$

= (30 – 2)% = 28%

**55.** (4) A : B : C = 11 : 7 : 5

Sum of the terms or ratio = 11 + 7 + 5 = 23

∴ B's share

$= \text{Rs. } \left(\frac{7}{23} \times 103500\right)$

= Rs. 31500

**56.** (1) Total weight of P, Q and R = 45 × 3 = 135 kg.

Total weight of P and Q = 2 × 36.5 = 73 kg.

∴ Weight of R = 135 – 73 = 62 kg.

Total weight of Q and R = 52 × 2 = 104 kg.

∴ Weight of Q = 104 – 62 = 42 kg.

**57.** (4) Profit per cent

$= \frac{1}{21-1} \times 100 = \frac{100}{20} = 5\%$

**58.** (4) 10% of 150% of 400

$= 400 \times \frac{150}{100} \times \frac{10}{100} = 60$

**59.** (1) Average speed

$= \frac{\text{Total distance}}{\text{Total time}}$

$= \left(\frac{144}{3.2} \times \frac{5}{8}\right)$ m/sec.

= 12.5 m/sec

**60.** (2) Let principal be Rs. 100.

∴ Amount = Rs. 118

Interest = Rs. (118 – 100) = Rs. 18

$\text{Rate} = \frac{\text{S.I.} \times 100}{\text{Time} \times \text{Principal}}$

$= \frac{18 \times 100}{2 \times 100} = 9\%$

$\therefore A = P\left(1 + \frac{r}{100}\right)^n$

$= 7000\left(1 + \frac{9}{100}\right)^3$

$= 7000 \times \frac{109}{100} \times \frac{109}{100} \times \frac{109}{100}$

= Rs. 9065.2

∴ C.I. = A – P

= Rs. (9065.2 – 7000)

= Rs. 2065.2

**61.** (1) $\frac{x}{3} - \frac{\left[5\left(\frac{7x}{5} - \frac{4}{3}\right)\right]}{2} = -\frac{x}{6}$

$\Rightarrow \frac{x}{3} - \frac{\left[5\left(\frac{21x-20}{15}\right)\right]}{2} = -\frac{x}{6}$

$\Rightarrow \frac{x}{3} - \frac{(21x-20)}{6} = -\frac{x}{6}$

$\Rightarrow \frac{2x - 21x + 20}{6} = \frac{-x}{6}$

$\Rightarrow -19x + 20 = -x$

$\Rightarrow 18x = 20$

$\Rightarrow x = \frac{20}{18} = \frac{10}{9}$

**62.** (2) $a^3 + b^3 = 19,\ a + b = 1$

$\therefore\ a^3 + b^3 = (a + b)^3 - 3ab\,(a + b)$

$\Rightarrow 19 = (1)^3 - 3ab\,(1)$

$\Rightarrow 3ab = 1 - 19 = -18$

$\Rightarrow ab = \frac{-18}{3} = -6$

**63.** (2) Let the fraction be $x$.

$\therefore$ Its reciprocal = $\frac{1}{x}$

According to the question,

$x - \frac{1}{x} = \frac{72}{77}$

$\Rightarrow \frac{x^2 - 1}{x} = \frac{72}{77}$

$\Rightarrow 77x^2 - 72x - 77 = 0$

$\Rightarrow 77x^2 - 121x + 49x - 77 = 0$

$\Rightarrow 11x\,(7x - 11) + 7\,(7x - 11) = 0$

$\Rightarrow (7x - 11)\,(11x + 7) = 0$

$x = \frac{11}{7}$ as $x \neq \frac{-7}{11}$

**64.** (3) $S_n = \frac{n}{2}\,[a + l]$

where $a$ = first term $l$ = last term

$\therefore\ S_{12} = \frac{12}{2}\,[-19 + 36]$

$= 6 \times 17 = 102$

**65.** (2) Reflection of point (–2, 5) in $x = -1$

$\frac{h + 2}{1} = \frac{-2(-2 + 1)}{1}$

$\Rightarrow h + 2 = 2$

$\Rightarrow h = 2 - 2 = 0$

$\therefore$ Reflection = (0, 5)

OR

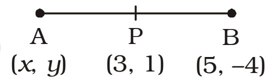
$x = 1$ is parallel to $y$–axis.

Point (–2, 5) lies in second quadrant whose position with respect to $x = -1$ is (–1, 5).

Its reflection in $x = -1$ will be on $y$–axis.

$\therefore$ Reflection = (0, 5)

**66.** (3)




P is mid point of line segment AB.

$\therefore \frac{x + 5}{2} = 3 \Rightarrow x = 6 - 5 = 1$

$\therefore \frac{y - 4}{2} = 1 \Rightarrow y = 2 + 4 = 6$

$\therefore$ Co-ordinates of A = (1, 6)

**67.** (2) Slope of line passing through (–5, 1) and (–2, 0)

$= \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 1}{-2 + 5} = \frac{-1}{3}$

Let slope of the line perpendicular to this line be $m$.

$\therefore\ m \times \frac{-1}{3} = -1$

$\Rightarrow m = 3 \qquad [\because\ m_1 m_2 = -1]$

**68.** (3) $\Delta$ABC and $\Delta$PQR are similar.

$\therefore \frac{\text{Perimeter of } \Delta ABC}{\text{Premeter of } \Delta PQR} = \frac{AB}{PQ}$

$\Rightarrow \frac{5}{9} = \frac{AB}{45}$

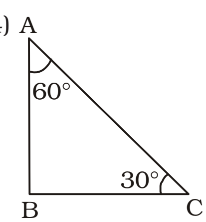
$\Rightarrow AB = \frac{5 \times 45}{9} = 25$ cm.

**69.** (4) $\frac{1}{\sqrt{2}} \cot 45° + \frac{1}{\sqrt{3}} \operatorname{cosec} 60°$

$= \frac{1}{\sqrt{2}} \times 1 + \frac{1}{\sqrt{3}} \times \frac{2}{\sqrt{3}}$

$= \frac{1}{\sqrt{2}} + \frac{2}{3} = \frac{3 + 2\sqrt{2}}{3\sqrt{2}}$

**70.** (4)




sec C sin A = sec 30° sin 60°

$= \frac{2}{\sqrt{3}} \times \frac{\sqrt{3}}{2} = 1$

**71.** (4) $\tan\theta = \frac{7}{24}$

$\therefore\ \sec\theta = \sqrt{1 + \tan^2\theta}$

$= \sqrt{1 + \left(\frac{7}{24}\right)^2} = \sqrt{1 + \frac{49}{576}}$

$= \sqrt{\frac{576 + 49}{576}} = \sqrt{\frac{625}{576}} = \frac{25}{24}$

**72.** (1) The airline E sold the second highest number of tickets (= 6000).

**73.** (3) Required per cent

$= \frac{6 - 5}{5} \times 100$

$= \frac{1}{5} \times 100 = 20\%$

**74.** (2)

$\frac{\text{Number of tickets sold by airlines A and D}}{\text{Number of tickets sold by airline E}}$

$= \frac{8000}{6000} = \frac{4}{3} = 4 : 3$

**75.** (3) Required revenue

$= (11000 - 6000) \times 7000$

$= 5000 \times 7000$

$= 35000000 = 35$ million

**76.** (2) **Near** = a short distance away.

**Close to doing something** = almost in a particular state.

**Look at the sentence :**

We are close to signing agreement.

Hence, close to..... should be used.

**77.** (3) **Across (Preposition)** = from one side (area) to the other.

**Look at the sentence :**

The child ran across the road.

**Along (Preposition)** = moving in a constant direction.

**Look at the sentence :**

The dog ran along the lake.

Hence, across the city..... should be used here.

**78.** (1) **Reprise (Verb)** = repeat a performance.

**Rescue/save (Verb)** = come to the aid of.

**Free (Verb)** = release; liberate.

**79.** (4) **Far too extravagant** = too extravagant; it just places more emphasis on the fact that the extravagance is excessive.

**80.** (3) **Fallacy/bias (Noun)** = false notion; misbelief.

⇒ The notion that the camera never lies is a fallacy; unfairness.

**Surety (Noun)** = guarantee; assurance.

**Conformity (Noun)** = compliance with; adherence to.

**Evidence (Noun)** = proof; confirmation.

**81.** (4) **Reproach/admonish (Verb)** = scold, rebuke.

**Look at the sentence :**

He reproached me for nothing.

**Commend/laud (Verb)** = praise; extol.

**Exonerate (Verb)** = absolve; acquit; declare innocent.

**82.** (2) **Veneration/adoration/reverence/admiration (Noun)** = respect; exaltation.

**Look at the sentence :**

The traditional veneration of saints.

**Contempt (Noun)** = criticism; disdain; hate.

**Look at the sentence :**

I stared at the girl with total contempt

**83.** (3) **Debatable/impugnable (Adjective)** = open to questions/attack.

⇒ impugnable issues

**Dicey (Adjective)** = risky; uncertain.

**Hazy (Adjective)** = misty; foggy; cloudy.

**Indubious (Adjective)** = doubtless; certain; indubitable.

⇒ indubious queries

**84.** (3) **to find exactly the right answer**

**Look at the sentence :**

I think Rohan hit the nail on the head by stating that the company lacked confidence.

**85.** (4) **in a precarious or risky situation**

**Look at the sentence :**

You are skating on thim ice.

**86.** (2) **were surprised**

All is a plural noun and it requires a plural verb, *i.e.*, were So, 'were surprised' is apt and appropriate.

**Surprised (Adjective)** = feeling or showing surprise.

**Look at the sentence :**

I was surprised to hear of his death.

**Surprising (Adjective)** = unexpected; causing surprise.

**Look at the sentence :**

I received a surprising gift.

**87.** (3) **in order to** = with the aim or purpose.

**Look at the sentence :**

He came home early in order to see the children before they went to bed.

⇒ in order to + $V_1$ → in order to become

**88.** (2) **Vehement (Adjective)** = passionate; forceful.

**Meek (Adjective)** = obedient; patient.

**Apathetic (Adjective)** = indifferent; uninterested.

**Impotent (Adjective)** = powerless; ineffective.

**89.** (1) **Denude/divulge/expose (Verb)** = bereave; bare; uncover; divest.

**90.** (3) **litigants** (= opponent in law).

**91.** (1) **stoically** (= with great determination)

**94.** (1) Every day the house is vacuumed and dusted by the maid.

It is active voice of simple present tense.

Its passive voice is formed as follows :

Subject + is/am/are + $V_3$ + by + obj...

**95.** (1) The spectators applauded Jay for his good hit.

It is direct speech of an exclamatory sentence.

Its indirect speech is formed as follows :

⇒ said changes to applauded (for bravo)

⇒ connector 'that' is used

⇒ pronouns change as per $\frac{\text{SON}}{1\ 2\ 3}$

⇒ Tense changes as per the rule

**96.** (2) **later** → comparative degree of late (positive degree)

**latest** → superlative degree

**later means** ⇒ after this/that; at a later state

**97.** (4) **this** → descriptive determiner; used for identifying a special person/thing.

**98.** (1) 'to-infinitive' is apt and appropriate

**turn** → a main verb, followed by to-infinitive.

⇒ I turned back to talk to her.

**99.** (4) play a game with someone → have amusement with someone.

⇒ I play carrom with my father daily.

**100.** (4) **of (Preposition)** = referring to belongingness

legs of the table

car of my father

❑❑❑

SET 26

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 18.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :

Square : 90° :: Equilateral triangle : ?

(1) 30° (2) 60°
(3) 90° (4) 120°

**2.** Select the related letters from the given alternatives :

ILN : FIK :: RUW : ?

(1) ORT (2) PSU
(3) NQS (4) LNQ

**3.** Select the related number from the given alternatives :

99 : 101 :: 100 : ?

(1) 90 (2) 110
(3) 111 (4) 102

**4.** Select the odd word from the given alternatives :

(1) Football (2) Hockey
(3) Carrom (4) Cricket

**5.** Select the odd letters from the given alternatives :

(1) ACE (2) FHJ
(3) QTW (4) KMO

**6.** Select the odd number from the given alternatives :

(1) 121 (2) 44
(3) 66 (4) 111

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.

tub, size, latin, formal, ?

(1) smooth (2) idle
(3) scramble (4) capital

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :

YXWv, TSrQ, OnML, jIHG, EDCb, ?

(1) YXwV (2) ZYxW
(3) XwVU (4) YxWV

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :

2, 5, 10, 17, ? , 37

(1) 24 (2) 30
(3) 32 (4) 26

**10.** Gurkiran's birthday is on Sunday 21st May. On what day of the week will be Shreyas's birthday in the same year if Shreyas was born on 14th November?

(1) Tuesday (2) Wednesday
(3) Friday (4) Saturday

**11.** The weights of 4 boxes are 40, 70, 80 and 50 kilograms.Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?

(1) 240 (2) 160
(3) 200 (4) 220

**12.** From the given words, select the word which cannot be formed using the letters of the given word.

**THUMBING**

(1) THING (2) MIGHT
(3) HAUNT (4) THUMB

**13.** If HUMBLED is coded as JWODNGF, then how will WAX be coded as?

(1) DHP (2) YCZ
(3) VIS (4) JMH

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?

60 × 5 + 3 ÷ 24 – 6 = ?

(1) 18 (2) 94
(3) 9 (4) 57

**15.** If 9 @ 3 = 12; 15 @ 4 = 22; 16 @ 14 = 4; then what is the value of 6 @ 2 = ?

(1) 26 (2) 1
(3) 30 (4) 8

**16.** Select the missing number form the given responses

| 3 | 4 | 2 | 14 |
|---|---|---|---|
| 6 | 5 | 4 | 44 |
| 5 | 2 | 7 | ? |

(1) 58 (2) 14
(3) 49 (4) 4

**17.** Two motorcyclists P and Q start from the same point. P rides 11 km West, then turns South and rides 16 km, then turns to his right and rides 14 km. Q rides 30 km South, then turns to his right and rides 25 km. Where is Q with respect to P now?

(1) 14 km North
(2) 14 km South
(3) 44 km South
(4) 44 km North

**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.

**Statement :** Should mango export be banned to bring down domestic prices?

**Argument I :** Yes, environmentalists and dieticians too encourage eating only local fruits.

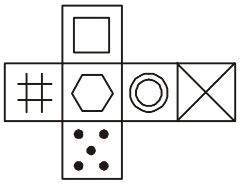
**Argument II :** No, exports bring in valuable foreign currency.

(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

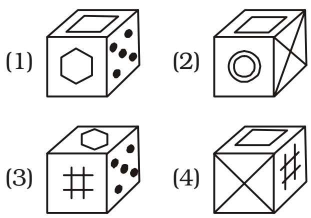
**19.** Which of the following cube in the answer figures cannot be made based on the unfolded

cube in the question figure ?

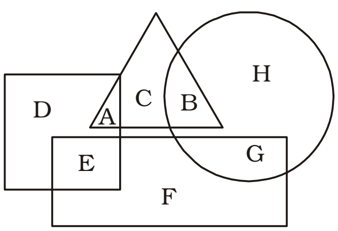
**Question Figure :**



**Answer Figures :**



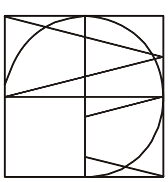

**20.** In the following figure, square represents Psychologists, triangle represents Chemists, circle represents Actors and rectangle represents Fathers. Which set of letters represents Psychologists and actors who are also fathers ?



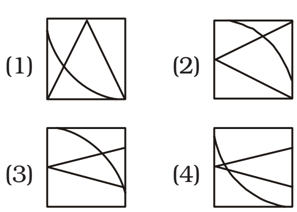

(1) G, D, A (2) F, A, C
(3) E, G (4) E, D, A

**21.** Which answer figure will complet the pattern in the question figure?

**Question Figure :**

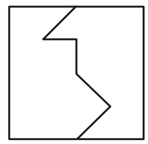


**Answer Figures :**

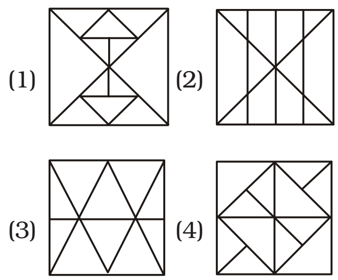



**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

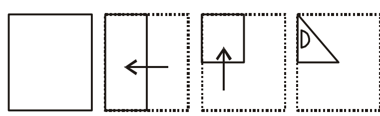


**Answer Figures :**

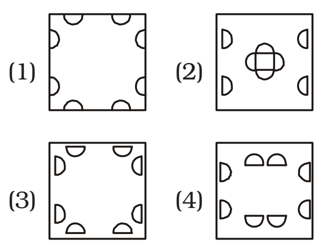



**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

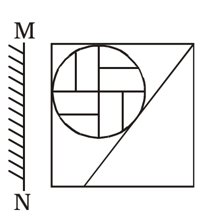


**Answer Figures :**

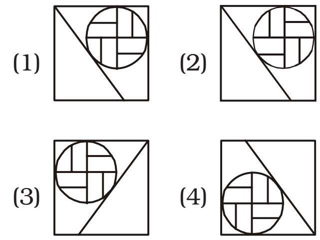



**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 20, 32 etc. and 'Z' can be represeted by 75, 78 etc. Similarly, you have to identify the set for the word **'SHOW'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | C | J | A | B | A |
| 1 | H | L | H | I | G |
| 2 | K | M | F | J | C |
| 3 | I | B | K | D | F |
| 4 | F | I | M | H | J |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | R | Z | R | T | P |
| 6 | S | S | S | T | X |
| 7 | Z | S | V | Z | Y |
| 8 | Q | Y | O | S | T |
| 9 | U | V | W | S | S |

(1) 21, 23, 78, 98
(2) 76,12, 87, 97
(3) 40, 32, 76, 79
(4) 33, 23, 57, 88

## GENERAL AWARENESS

**26.** The closest example of a centrally planned economy is the _________ for the major part of the 20th Century.
(1) USA
(2) India
(3) Soviet Union
(4) Japan

**27.** _________ is the relationship between the variable input and output, keeping all other inputs are held constant.
(1) Total product
(2) Average product
(3) Isoquant
(4) The Long Run

**28.** ____________ means cases that can be directly considered by the Supreme Court without going to the lower courts before that.
(1) Original Jurisdiction
(2) Writ Jurisdiction
(3) Appellate Jurisdiction
(4) Advisory Jurisdiction

**29.** Under which of the following jurisdiction can any individual, whose fundamental right has been violated, can directly move the Supreme Court for remedy?
(1) Original Jurisdiction
(2) Writ Jurisdiction
(3) Appellate Jurisdiction
(4) Advisory Jurisdiction

**30.** During their rule the British persuaded or forced cultivators in Bengal to grow _________.
(1) Jute
(2) Tea
(3) Sugarcane
(4) Wheat

**31.** The Mongols under __________ invaded Transoxiana in northeast Iran in 1219.
(1) Timur Lang
(2) Nadir Shah
(3) Ahmed Shah Abdali
(4) Genghis Khan

**32.** In the biosphere living beings are inter-related and interdependent on each other for survival. This life supporting system is known as the
(1) Ecosystem
(2) Mountain range
(3) Forest
(4) Atmosphere

**33.** The part of the Himalayas between Tista and Dihang rivers is known as _____ Himalayas.
(1) Nepal (2) Kashmir
(3) Assam (4) Jammu

**34.** Other name of Platelets is
(1) Leucocytes
(2) Erythrocytes
(3) Platelets
(4) Thrombocytes

**35.** In stems, the protoxylem lies towards the centre and the metaxylem lies towards the periphery of the organ. This type of primary xylem is called
(1) Xylem fibres
(2) Xylem parenchyma
(3) Exarch
(4) Endarch

**36.** _________ is the second largest animal phylum.
(1) Mollusca
(2) Chordata
(3) Coelomates
(4) Anneldia

**37.** In a qualitative way, the tendency of undisturbed objects to stay at rest or to keep moving with the same velocity is called
(1) force (2) acceleration
(3) friction (4) inertia

**38.** The time taken by a pendulum to complete one oscillation is called its?
(1) Maximum speed
(2) Average speed
(3) Time period
(4) Time interval

**39.** Teach Text' is a text editor in which of the following operating systems?
(1) Windows
(2) Google Chrome
(3) Mozilla Firefox
(4) Macintosh

**40.** Metals react with sodium hydroxide to produce
(1) oxygen gas
(2) sodium
(3) water
(4) hydrogen gas

**41.** Which base is present in lime water?
(1) Sodium hydroxide
(2) Magnesium hydroxide
(3) Calcium hydroxide
(4) Ammonium hydroxide

**42.** Presence of large amounts of nutrients in waters also causes excessive growth of _______ algae.
(1) Biomagnification
(2) Algal bloom
(3) planktonic
(4) Eutrophication

**43.** _________ scheme launched by the Central Government plans to issue soil cards to farmers which will carry crop-wise recommendations of nutrients and fertilisers.
(1) Soil Health Card
(2) Shyama Pras ad Mukherji Rurban Mission
(3) Pradhan Mantri Fasal Bima Yojana
(4) National R-URBAN Mission

**44.** Who invented the electric tram?
(1) James Cook
(2) William Harvey
(3) Fyodor Pirotsky
(4) Robert Boyles

**45.** Who was the 2015 Men's Rugby World Cup Winner?
(1) New Zealand
(2) South Africa
(3) Australia
(4) England

**46.** Indian Mughal paintings originated during the rule of which Mughal Emperor?
(1) Humayun
(2) Akbar
(3) Jahangir (4) Shah Jahan

**47.** Which of the following won the Best Film in 62nd Filmfare Awards 2017?

(1) Dangal (2) Rustom
(3) Airlift (4) Udta Punjab

**48.** Which of the statements given below are correct?
1. The author of the novel 'Forty Thieves' is Thomas Perry.
2. The author of the novel 'Half of a Yellow Sun' is Jennifer Egan.
3. The author of the novel 'Middlesex' is Chimamanda Ngozi Adichie.

(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** What was USA's rank in 2016 Human Development Index published by the United Nations Development Programme?
(1) 1 (2) 10
(3) 100 (4) 200

**50.** The Delhi – Lahore Bus is officially known as _________.
(1) Sada-e -Sarhad
(2) Maitree bus
(3) Yaad-e-Shaheed
(4) Dostibus

## QUANTITATIVE APTITUDE

**51.** What is the remainder when 6729 is divided by 35?
(1) 11 (2) 7
(3) 19 (4) 13

**52.** A, B and C can finish a job working alone in 72, 24 and 36 days respectively. In how many days can they finish the job if they work together?
(1) 12 (2) 9
(3) 15 (4) 18

**53.** The area of 4 walls of a cuboid is 448 sq cm, its length is 18 cm and height is 8 cm. What is its breadth (in cm)?
(1) 10 (2) 9
(3) 8 (4) 7

**54.** At 10% discount the selling price of an article is Rs. 4500. What is the selling price (in Rs.) if the discount is 27.5%?
(1) 4000 (2) 3625
(3) 3500 (4) 3125

**55.** What is the fourth proportional to 72, 168 and 150?
(1) 450 (2) 300
(3) 350 (4) 400

**56.** What is the average of all numbers between 11 and 80 which are divisible by 6?
(1) 46 (2) 47
(3) 44 (4) 45

**57.** A trader had 960 kgs. of rice. He sold a part of it at 20% profit and the rest at 8% profit, so that he made a total profit of 12%. How much rice (in kgs) did he sell at 8% profit?
(1) 460 (2) 560
(3) 540 (4) 640

**58.** If 40% of $x = y$, then $y$% of 40 is same as _______ of $x$.
(1) 16% (2) 4%
(3) 8% (4) 160%

**59.** Excluding stoppages, the speed of a bus is 72 kmph and including stoppages, it is 60 kmph. For how many minutes does the bus stop per hour?
(1) 12 (2) 8
(3) 15 (4) 10

**60.** The simple and compound interest that can be earned in two years at the same rate is Rs. 1500 and Rs. 1575 respectively. What is the rate (% per annum) of interest?
(1) 8 (2) 10
(3) 12 (4) 5

**61.** If $\frac{\left[7\left(\frac{5x}{3}-\frac{3}{2}\right)\right]}{2}+\frac{3}{2}=\frac{1}{4}$, then what is the value of $x$?
(1) $\frac{35}{24}$ (2) $\frac{24}{35}$
(3) $-\frac{24}{35}$ (4) $-\frac{35}{24}$

**62.** If $a^3 + b^3 = 19$ and $ab = -6$, then what is the value of $(a + b)$ ?
(1) 5 (2) 7
(3) 1 (4) –5

**63.** The sum of four times a fraction and 6 times its reciprocal is 11. What is the fraction?
(1) $\frac{3}{4}$ (2) $\frac{4}{3}$
(3) $\frac{4}{7}$ (4) $\frac{7}{4}$

**64.** What is the sum of the first 12 terms of an arithmetic progression if the 3rd term is –13 and the 6th term is –4?
(1) 67 (2) 45
(3) –30 (4) –48

**65.** What is the reflection of the point (5, 2) in the line $x = -3$?
(1) (–11 ,2 ) (2) (–11 ,-2)
(3) (11 ,–2) (4) (11 ,2)

**66.** What are the co-ordinates of the centroid of a triangle, whose vertices are A (1, –5), B (4, 0) and C (–2, 2)?
(1) (1, –1) (2) (–1, 1)
(3) (2, –2) (4) (–2, 2)

**67.** The slope of the line AB is $-\frac{4}{3}$. co-ordinates of points A and B are ($x$, –5) and (–5, 3) _____ respectively. What is the value of $x$?
(1) –1 (2) 2
(3) –2 (4) 1

**68.** D and E are points on sides AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 2 : 5 and area of ΔADE is 8 sq. cm. what is the ratio of area of Δ ADE and the area of quadrilateral BDEC?
(1) (4 : 45) (2) (45 : 4)
(3) (8 : 45) (4) (45 : 8)

**69.** What is the value of $\sqrt{2}$ sec45° – tan30°?
(1) $\frac{\left(2\sqrt{3}-1\right)}{3}$
(2) $\frac{\left(\sqrt{3}-1\right)}{\sqrt{3}}$
(3) $\frac{\left(2\sqrt{3}-1\right)}{\sqrt{3}}$
(4) $\frac{\left(\sqrt{3}-1\right)}{3}$

**70.** ΔABC is right angled at B. If $m\angle A = 60°$, then what is the value of $\frac{1}{\sqrt{3}}$ cosec C?

(1) $\frac{2}{\sqrt{3}}$ (2) $\frac{2}{3}$

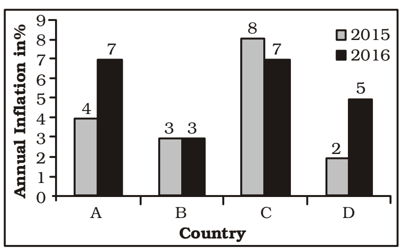
(3) $\frac{\sqrt{2}}{\sqrt{3}}$ (4) $\frac{\sqrt{2}}{3}$

**71.** If cosec θ = $\frac{25}{7}$, then what is the value of cot θ ?

(1) $\frac{24}{25}$ (2) $\frac{7}{24}$

(3) $\frac{7}{25}$ (4) $\frac{24}{7}$

**Directions (72–75) :** The bar graph shows annual inflation in two years 2015 and 2016 of four countries (A, B, C, D). Study the diagram and answer the following questions.




**72.** In which country inflation in 2016 was lower than that of the previous year?

(1) C (2) A

(3) B (4) D

**73.** By what percent inflation in 2016 was greater than the inflation in 2015 in country D?

(1) 60 (2) 100

(3) 150 (4) 120

**74.** In the year 2015, what is the ratio of inflation in country C to country A?

(1) 1 : 2 (2) 2 : 3

(3) 3 : 2 (4) 2 : 1

**75.** If inflation is measured as increase in price index and the price index was 200 in the beginning of 2015 in country D then what is the index at the end of 2016?

(1) 207 (2) 207.2

(3) 210 (4) 214.2

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** Several great battles (1)/ took place among (2)/ the British and the Americans. (3)/ No Error (4)

**77.** The stream gurgled (1)/ contentedly as it (2)/ slowed to rounding the bend. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** The criminal changed his name to an _________ in order to elude the police.

(1) alternative

(2) alias

(3) option

(4) untrue

**79.** The ________ my husband and I had was so loud it woke our children.

(1) quarrel (2) coral

(3) moral (4) laurel

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Litter**

(1) Trash (2) Order

(3) Possess (4) System

**81. Obliterate**

(1) Construct (2) Annihilate

(3) Revive (4) Initiate

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Scrimp**

(1) Skimp (2) Conserve

(3) Squander (4) Curtail

**83. Guzzle**

(1) Carouse (2) Starve

(3) Imbibe (4) Quaff

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To heave a sigh of relief**

(1) To become very tired with routine or boring work

(2) To suddenly feel very happy because something unpleasant has not happened or has ended

(3) To feel extremely sad over someone else's misfortune

(4) To feel silent anger over real or perceived injustice

**85. To be on cloud nine**

(1) To be extremely happy

(2) To feely lucky

(3) To experience the feeling of being intoxicated

(4) To make one last attempt

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "no improvement".

**86.** She was uneasy because she **(never be)** on a plane before.

(1) had never been

(2) never been

(3) is never been

(4) No improvement

**87.** No one knows how he escaped **(dash)** to pieces.

(1) being dash

(2) being dashed

(3) dashed

(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. The upward force that a fluid exerts on a body floating in it**

(1) Upthrust (2) Plunge
(3) Submerge (4) Capsize

**89. The use of irony to mock or convey contempt**

(1) Sanction
(2) Flatter
(3) Compliment
(4) Sarcasm

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Threashing
(2) Thrasheing
(3) Threasheing
(4) Thrashing

**91.** (1) Conssensus
(2) Consenssus
(3) Consensus
(4) Conssenssus

**Directions (92–93) :** Each question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. As for ourselves, we**

X. combing our hair
Y. a good wash and
Z. were contented with

(1) ZXY (2) YZX
(3) YXZ (4) ZYX

**93. If there is a**

X. corresponding sensation
Y. kind, there has to be a
Z. change in brain activity of a certain

(1) ZXY (2) ZYX
(3) YZX (4) YXZ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**The fire destroyed the whole neighbourhood.**

(1) The whole neighbourhood is destroyed by the fire.
(2) The whole neighbourhood was destroyed by the fire.
(3) The whole neighbourhood was being destroyed by the fire.
(4) The whole neighbourhood is being destroyed by the fire.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**The accused said to the judge, "Let me meet my children before I die, sir."**

(1) The accused requests the judge to let him meet his children before he died.
(2) The accused requested the judge to let him meet his children before he died .
(3) The accused begs the judge to allow him to meet his children before he dies.
(4) The accused begged the judge to let him meet his children before he dies.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

"Jim Crow" shuns the mountains for reasons satisfactory to himself; not so the magpie, the raven, and **(96)** mischief-maker, Clark's nutcracker. All of which keeps the bird-lover from the East in an ecstasy of surprises until he has **(97)** accustomed to his changed environment. One cannot help **(98)** into the speculative mood in view of the sharp contrasts **(99)** the birds of the East and **(100)** of the West.

**96.** (1) what (2) it
(3) that (4) there

**97.** (1) became (2) becomes
(3) to be (4) become

**98.** (1) to fall (2) fallen
(3) falling (4) fell

**99.** (1) beside (2) beneath
(3) between (4) below

**100.** (1) whose (2) this
(3) those (4) whom

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (1) | **3.** (2) | **4.** (3) |
| **5.** (3) | **6.** (4) | **7.** (4) | **8.** (2) |
| **9.** (4) | **10.** (1) | **11.** (4) | **12.** (3) |
| **13.** (2) | **14.** (1) | **15.** (4) | **16.** (3) |
| **17.** (2) | **18.** (2) | **19.** (1) | **20.** (3) |
| **21.** (4) | **22.** (1) | **23.** (3) | **24.** (1) |
| **25.** (2) | **26.** (3) | **27.** (1) | **28.** (1) |
| **29.** (2) | **30.** (1) | **33.** (4) | **32.** (1) |
| **33.** (3) | **34.** (4) | **35.** (4) | **36.** (1) |
| **37.** (1) | **38.** (3) | **39.** (4) | **40.** (4) |
| **41.** (3) | **42.** (2) | **43.** (1) | **44.** (3) |
| **45.** (1) | **46.** (1) | **47.** (1) | **48.** (*) |
| **49.** (2) | **50.** (1) | **51.** (*) | **52.** (1) |
| **53.** (1) | **54.** (2) | **55.** (3) | **56.** (4) |
| **57.** (4) | **58.** (1) | **59.** (4) | **60.** (2) |
| **61.** (2) | **62.** (3) | **63.** (1) | **64.** (3) |
| **65.** (1) | **66.** (1) | **67.** (4) | **68.** (1) |
| **69.** (3) | **70.** (1) | **71.** (4) | **72.** (1) |
| **73.** (3) | **74.** (4) | **75.** (4) | **76.** (2) |
| **77.** (3) | **78.** (2) | **79.** (1) | **80.** (1) |
| **81.** (2) | **82.** (3) | **83.** (2) | **84.** (2) |
| **85.** (1) | **86.** (4) | **87.** (2) | **88.** (1) |
| **89.** (4) | **90.** (4) | **91.** (3) | **92.** (4) |
| **93.** (2) | **94.** (2) | **95.** (2) | **96.** (3) |
| **97.** (4) | **98.** (3) | **99.** (3) | **100.** (3) |

## EXPLANATIONS

**1.** (2) Each angle of square is 90°. Similarly,
Each angle of equilateral triangle is 60°.

**2.** (1)

I L N : F I K : : R U W : O R T
(I –3 → F, L –3 → I, N –3 → K; R –3 → O, U –3 → R, W –3 → T)

**3.** (2) 99 : 101 :: 100 : 102
(99 +2 → 101; 100 +2 → 102)

**4.** (3) Except Carrom, all others are outdoor games. Carrom is an indoor game.

**5.** (3) A $\xrightarrow{+2}$ C $\xrightarrow{+2}$ E
F $\xrightarrow{+2}$ H $\xrightarrow{+2}$ J
K $\xrightarrow{+2}$ M $\xrightarrow{+2}$ O
But,
Q $\xrightarrow{+3}$ T $\xrightarrow{+3}$ W

**6.** (4) Except the number 111, all other numbers are multiples of 11.
121 = 11 × 11
44 = 4 × 11
66 = 6 × 11
But,
111 = 3 × 37

**7.** (4) The number of letters in the words is increasing by one from left to right.
tub ⇒ 3 letters
size ⇒ 4 letters
latin ⇒ 5 letters
formal ⇒ 6 letters
capital ⇒ 7 letters

**8.** (2) In each letter group one is small letter which is shifted from right to left by one place.

Y $\xrightarrow{-5}$ T $\xrightarrow{-5}$ O $\xrightarrow{-5}$ J $\xrightarrow{-5}$ E $\xrightarrow{-5}$ Z
X $\xrightarrow{-5}$ S $\xrightarrow{-5}$ N $\xrightarrow{-5}$ I $\xrightarrow{-5}$ D $\xrightarrow{-5}$ Y
W $\xrightarrow{-5}$ R $\xrightarrow{-5}$ M $\xrightarrow{-5}$ H $\xrightarrow{-5}$ C $\xrightarrow{-5}$ X
V $\xrightarrow{-5}$ Q $\xrightarrow{-5}$ L $\xrightarrow{-5}$ G $\xrightarrow{-5}$ B $\xrightarrow{-5}$ W

**9.** (4) 2 $\xrightarrow{+3}$ 5 $\xrightarrow{+5}$ 10 $\xrightarrow{+7}$ 17 $\xrightarrow{+9}$ **26** $\xrightarrow{+10}$ 37

**10.** (1) Number of days from 21st May to 14th November
= 10 + 30 + 31 + 31 + 30 + 31 + 14
= 177
= 25 weeks + 2 odd days.
Number of odd days = 2
∴ Sunday + 2 = Tuesday

**11.** (4) Possible weights of combinations of boxes :
(i) 40 + 70 = 110
(ii) 40 + 80 = 120
(iii) 40 + 50 = 90
(iv) 40 + 70 + 80 = 190
(v) 40 + 70 + 50 = 160
(vi) 40 + 80 + 50 = 170
(vii) 40 + 70 + 80 + 50 = 240
(viii) 70 + 80 = 150
(ix) 70 + 50 = 120
(x) 70 + 80 + 50 = 200
(xi) 80 + 50 = 130

**12.** (3) There is no 'A' letter in the given word. Therefore, the word HAUNT cannot be formed.

[T H] U M B [I N G]
⇒ THING

[T H] U [M] B [I] N [G]
⇒ MIGHT

[T H U M B] I N G ⇒ THUMB

**13.** (2) H U M B L E D
(each +2)
J W O D N G F

Therefore,
W A X
(each +2)
Y C Z

**14.** (1)

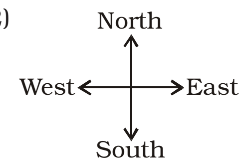
| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

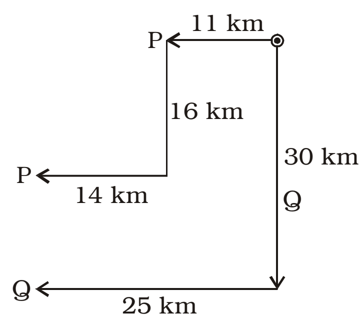
60 × 5 + 3 ÷ 24 – 6 = ?
⇒ ? = 60 ÷ 5 × 3 – 24 + 6
⇒ ? = 12 × 3 – 24 + 6
⇒ ? = 36 – 24 + 6
⇒ ? = 42 – 24 = 18

**15.** (4) 9 @ 3 = (9 – 3) × 2
= 6 × 2 = 12
15 @ 4 = (15 – 4) × 2
= 11 × 2 = 22
16 @ 14 = (16 – 14) × 2
= 2 × 2 = 4
Therefore,
6 @ 2 = (6 – 2) × 2
= 4 × 2 = 8

**16.** (3) First Row
(3 + 4) × 2 = 14
Second Row
(6 + 5) × 4 = 44
Third Row
(5 + 2 ) × 7 = 49

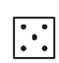
**17.** (2)




Position of Q from P = 30 – 16
= 14 km South

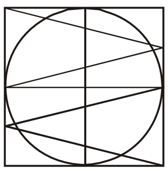
**18.** (2) Argument II hightlights important fact. Therefore, only argument II is strong.

**19.** (1) After folding the figure :
[#] lies opposite .
[□] lies opposite .
[⬡] lies opposite .
[□] cannot be on the face adjacent to . Therefore, the cube given against option (1) cannot be formed.

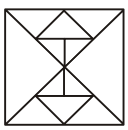
**20.** (3) Psychologists who are fathers can be represented by the letter common to the square and the rectangle. Such letter is 'E'.

Actors who are fathers can be represented by the letter common to the circle and the rectangle. Such letter is 'G'.

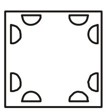
**21.** (4)



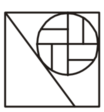
**22.** (1)



**23.** (3)



**24.** (1)



**25.** (2) S = 65, 66, 67, 76, 88, 98, 99

H = 10, 12, 43

O = 87

W = 97

| Option | S | H | O | W |
|---|---|---|---|---|
| (1) | 21 | 23 | 78 | 98 |
| (2) | 76 | 12 | 87 | 97 |
| (3) | 40 | 32 | 76 | 79 |
| (4) | 33 | 23 | 57 | 88 |

**26.** (3) A centrally planned economy is one in which the total direction and development of a nation's economy is planned and administered by its government. Central planning evolved in the Soviet Union following the Bolshevik Revolution of 1917.

**27.** (1) Total product of a factor is the amount of total output produced by a given amount of the factor, other factors held constant. As the amount of a factor increases, the total output increases.

**28.** (1) The Supreme Court has original, appellate and advisory jurisdiction. Its exclusive original jurisdiction extends to any dispute between the Government of India and one or more States or between the Government of India and any State or States on one side and one or more States on the other or between two or more States. It has been conferred with power to direct transfer of any civil or criminal case from one State High Court to another State High Court or from a Court subordinate to another State High Court.

**29.** (2) The constitution of India has designed for the enforcement of fundamental rights and for a judicial review of administrative actions, in the form of writs. It is a constitutional remedy available to a person to bring his complaint or grievance against any administrative action to the notice of the court. Writ jurisdiction is exercised by the Supreme Court and the High courts only. This power is conferred to Supreme Court by article 32 and to high courts by article 226.

**30.** (1) The British forced Indian farmers to produce jute in Bengal, tea in Assam, sugarcane in Uttar Pradesh, wheat in Punjab, cotton in Maharashtra and Punjab and rice in Madras.

**31.** (4) In 1219, Genghis and his army started war against the Khwarezmid Empire. He sent special troops to find and kill Shah Ala al-Din Muhammad II, the shah who murdered Genghis' envoys. In 1219, Mongols begin a campaign against Transoxiana, comprising parts of Uzbekistan, Tajikistan, Kyrgyzstan and Kazakhstan.

**32.** (1) An ecosystem is a community of plants and animals interacting with each other in a given area, and also with their non-living environments. The ecosystem relates to the way that all these different organisms live in close proximity to each other and how they interact with each other.

**33.** (3) The Assam Himalaya extends for a distance of 720 kilometers between the river Tista and the Dihang (Tsangpo-Brahmaputra). The Subansiri, Manas, Sankosh, Raidak, and Jaldhaka rivers rise in the mountains and flow southward to join the Brahmaputra.

**34.** (4) Blood is the fluid in living organism that transports oxygen and nutrients to the cells in the body. It consists of Red Blood Cells (Erythrocytes), White Blood Cells(Leukocytes) and platelets (Thrombocytes). Platelets are the part of the blood that helps to prevent blood loss through wounds by forming clot and fight off infections.

**35.** (4) Endarch is the arrangement in which the protoxylem is directed towards the centre and metaxylem elements towards the periphery. The development of the xylems in this arrangement follows the centrifugal pattern. It is the characteristics of the stem of flowering plants.

**36.** (1) The phylum Mollusca is the second-largest animal phylum, with over 100,000 species. The molluscs include many familiar animals, including clams, snails, slugs, and squid, as well as some less familiar animals, like tusk shells and chitons.

**37.** (1) Inertia is the resistance of any physical object to any change in its state of motion. This includes changes to the object's speed, direction, or state of rest. Inertia is also defined as the tendency of objects to keep moving in a straight line at a constant velocity.

**38.** (3) Time period is the time taken by the bob of the simple pendulum to make one complete oscillation. The distance between the point of suspension of the pendulum and its Centre of Gravity (C.G.), which is the C.G. of the bob, is called the length of the simple pendulum.

**39.** (4) The Teach Text application is a simple text editor made by Apple Computer and included with System 7.1 and earlier. Edit was included with early versions of the basic system software to demonstrate the use of the Macintosh user interface. It was used mainly by users to display Read Me documents.

**40.** (4) Metals react with Sodium hydroxide to produce hydrogen gas. For example; Sodium hydroxide reacts with aluminium and water to release hydrogen gas. The aluminium takes the oxygen atom from sodium hydroxide, which in turn takes the oxygen atom from the water, and releases the two hydrogen atoms. The reaction thus produces hydrogen gas and sodium aluminate.

**41.** (3) Limewater is the common name for a diluted solution of calcium hydroxide. Limewater is prepared by stirring calcium hydroxide in pure water and filtering off the excess undissolved Ca(OH)2. When excess calcium hydroxide is added to limewater, a suspension of calcium hydroxide particles results, giving it a milky aspect, in which case it has the common name of milk of lime.

**42.** (2) In small amounts nutrients are beneficial to many ecosystems. In excessive amounts, however, nutrients cause a type of pollution called eutrophication. Eutrophication stimulates an explosive growth of algae (algal blooms) that depletes the water of oxygen when the the algae die and are eaten by bacteria.

**43.** (1) The Soil Health Card will be issued every three years, provides information to farmers on the nutrient status of soil along with recommendations on appropriate dosage of soil nutrients to be applied for improving soil health and its fertility. This scheme is being implemented in collaboration with State Governments. GPS based soil sample collection has been made compulsory to monitor the changes in soil and to prepare a systematic database to compare them with the past years'

**44.** (3) Fyodor Pirotsky was a Russian engineer of Ukrainian origin and inventor of the world's first railway electrification system and electric tram. While the commercialization of his inventions in Russia was relatively slow, Pirotsky is known to have met with Carl Heinrich von Siemens and influenced Siemens' eventual introduction of the first regular electric tram line.

**45.** (1) The 2015 Rugby World Cup was the eighth Rugby World Cup hosted by England. New Zealand won the cup and defended their title by defeating Australia in the final. This was the first Rugby World Cup where no Northern Hemisphere team got beyond the quarter-finals.

**46.** (1) The foundation of Mughal painting was laid by Humayun during his exile from India in Persia and Afghanistan. Two of Persia's greatest painters Mir Sayyid Ali and Abdus Samad came with him to Delhi and helped to produce some paintings.

**47.** (1) Aamir Khan bagged the Best Actor Award for his performance in 'Dangal'. Alia Bhatt was honoured with the Best Actress Award for her gritty portrayal of a Bihari migrant in 'Udta Punjab'. 'Dangal' was awarded the Best Film and Nitesh Tiwari bagged the Best Director Award.

**48.** (*) Forty Thieves is a novel by Thomas Perry

- Half of a Yellow Sun is a novel by Nigerian author Chimamanda Ngozi Adichie.
- Middlesex is a Pulitzer Prize-winning novel by Jeffrey Eugenides published in 2002.

**49.** (2) The HDI is a measure for assessing progress in three basic dimensions of human development: a long and healthy life, access to knowledge, and access to a decent standard of living. United States' HDI value for 2015 is 0.920 which put the country in the very high human development category, positioning it at 10 out of 188 countries and territories.

**50.** (1) The Delhi–Lahore Bus, officially known as Sada-e-Sarhad is a passenger bus service connecting the Indian capital of Delhi with the city of Lahore, Pakistan via the border transit post at Wagah.

**51.** (*) On dividing 6729 by 35, remainder = 9

Illustration :

```
35)6729(192
   35
   322
   315
    79
    70
     9
```

**52.** (1) (A + B + C)'s 1 days work

$$= \frac{1}{72} + \frac{1}{24} + \frac{1}{36}$$

$$= \frac{2+6+4}{144} = \frac{12}{144} = \frac{1}{12}$$

$\therefore$ Required time = 12 days

**53.** (1) Area of four walls of cuboid = 448 sq. cm.

$\Rightarrow$ 2 × height × (length + breadth) = 448

$\Rightarrow 2 \times 8 \times (18 + \text{breadth}) = 448$

$\Rightarrow 18 + \text{breadth} = \frac{448}{2 \times 8} = 28$

$\Rightarrow$ Breadth = 28 – 18 = 10 cm

**54.** (2) Let marked price be Rs. $x$.

$\therefore$ 90% of $x = 4500$

$\Rightarrow x \times \frac{90}{100} = 4500$

$\Rightarrow x = \frac{4500 \times 100}{90} = \text{Rs. } 5000$

Now, discount = 27.5%

$\therefore$ Selling price = 72.5% of Rs. 5000

$= \text{Rs.} \left(\frac{5000 \times 72.5}{100}\right)$

= Rs. 3625

**55.** (3) Let the fourth proportional to 72, 168 and 150 be $x$.

$\therefore 72 : 168 : 150 : x$

$\Rightarrow \frac{72}{168} = \frac{150}{x}$

$\Rightarrow 72x = 150 \times 168$

$\Rightarrow x = \frac{150 \times 168}{72} = 350$

**56.** (4) The numbers divisible by 6, between 11 and 80.

12, 18, 24,...... 78.

It is an arithmetic progression with first term = 12 common difference = 6 and nth term = 78.

$\therefore a_n = a + (n - 1)\, d$

$\Rightarrow 78 = 12 + (n - 1)6$

$\Rightarrow n = \frac{78 - 12}{6} + 1 = \frac{66}{6} + 1$

= 12

$\therefore S = \frac{n}{2}(a + l) = \frac{12}{2}(12 + 78)$

$= 6 \times 90 = 540$

Required average $= \frac{540}{12} = 45$

**57.** (4) Let $x$ kg of rice be sold at 8% profit.

$\therefore$ Quantity of rice sold at 20% profit = $(960 - x)$ kg

According to the question,

$(960 - x) \times \frac{120}{100} + x \times \frac{108}{100}$

$= 960 \times \frac{112}{100}$

$\Rightarrow 960 \times 120 - 120x + 108x$

$= 960 \times 112$

$\Rightarrow 12x = 960 \times 8$

$\Rightarrow x = \frac{960 \times 8}{12} = 640$ kg

**58.** (1) 40% of $x = y$

$\Rightarrow x \times \frac{40}{100} = y$

$\Rightarrow y = \frac{40x}{100}$

Now, $y$% of 40

$= \frac{40x}{100}$% of 40

$= \frac{40x}{100} \times \frac{1}{100}$ of 40

$= \frac{16x}{100}$ = 16% of $x$.

**59.** (4) Due to stoppage, bus covers = (72 – 60) = 12 km less distance.

Time taken to cover 12 km distance $= \frac{12}{72} \times 60 = 10$ minutes

**60.** (2) $\text{S.I.} = \frac{P \times R \times T}{100}$

$\Rightarrow 1500 = \frac{P \times R \times 2}{100}$

$P = \frac{1500 \times 100}{2r} = \frac{75000}{r}$

C.I. – S.I. = Rs. (1575 – 1500)

= Rs. 75

Difference = Principal $\times \left(\frac{r}{100}\right)^2$

$\Rightarrow 75 = \frac{75000}{r} \times \left(\frac{r}{100}\right)^2$

$\Rightarrow 75 = \frac{75000 \times r}{100 \times 100}$

$\Rightarrow r = \frac{75 \times 100 \times 100}{75000}$

= 10% p. a.

**61.** (2) $\frac{\left[7\left(\frac{5x}{3} - \frac{3}{2}\right)\right]}{2} + \frac{3}{2} = \frac{1}{4}$

$\Rightarrow \frac{\left[\frac{35x}{3} - \frac{21}{2}\right]}{2} + \frac{3}{2} = \frac{1}{4}$

$\Rightarrow \frac{70x - 63}{6} \times \frac{1}{2} + \frac{3}{2} = \frac{1}{4}$

$\Rightarrow \frac{70x - 63}{12} + \frac{3}{2} = \frac{1}{4}$

$\Rightarrow \frac{70x - 63 + 18}{12} = \frac{1}{4}$

$\Rightarrow 70x - 45 = \frac{12}{4} = 3$

$\Rightarrow 70x = 45 + 3 = 48$

$\Rightarrow x = \frac{48}{70} = \frac{24}{35}$

**62.** (3) $a^3 + b^3 = 19$, $ab = -6$

$\Rightarrow a^3 + b^3 = (a + b)^3 - 3ab(a + b)$

$\Rightarrow 19 = (a + b)^3 - 3 \times (-6)(a + b)$

$19 = (a + b)^3 + 18(a + b)$

Clearly, $a + b = 1$

**63.** (1) Let the fraction be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$4x + \frac{6}{x} = 11$

$\Rightarrow 4x^2 + 6 = 11x$

$\Rightarrow 4x^2 - 11x + 6 = 0$

$\Rightarrow 4x^2 - 8x - 3x + 6 = 0$

$\Rightarrow 4x(x - 2) - 3(x - 2) = 0$

$\Rightarrow (x - 2)(4x - 3) = 0$

$\therefore x = 2$ or $x = \frac{3}{4}$

**64.** (3) Let the first term of A.P. be and the common difference be

$\therefore a_n = a + (n - 1)\, d$

$\Rightarrow a + 2d = -13$ ..... (i)

$a + 5d = -4$ .... (ii)

Equation (i) – (ii),

$$\begin{array}{rcl} a + 2d &=& -13 \\ a + 5d &=& -4 \\ - \quad - & & + \\ \hline -3d &=& -9 \end{array}$$

$\Rightarrow d = 3$

$\therefore a + 2d = -13$

$\Rightarrow a + 2 \times 3 = -13$

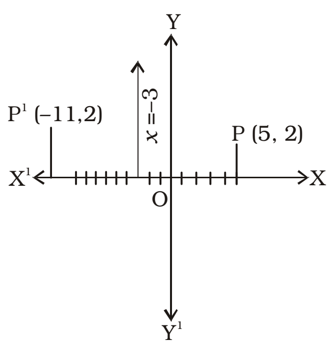
$\Rightarrow a = -13 - 6 = -19$

$\therefore S_n = \frac{n}{2}\ [2a + (n - 1)\ d]$

$\Rightarrow S_{12} = \frac{12}{2}\ [2 \times -19 + (12 - 1)3]$

$= 6\ [-38 + 33] = 6 \times -5 = -30$

**65.** (1)




Co-ordinates of P with respect to $x = -3$

$= (5 + 3,\ 2)$

$= (8,\ 2)$

Position of reflection in $x = -3$

$= (-8,\ 2)$

$\therefore$ Position of reflection with respect to $y$-axis

$= (-11,\ 2)$

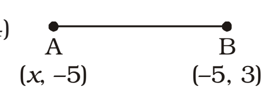
**66.** (1) Co-ordinates of centroid of triangle

$$= \left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}\right)$$

$$= \left(\frac{1 + 4 - 2}{3}, \frac{-5 + 0 + 2}{3}\right)$$

$= (1,\ -1)$

**67.** (4)




$$\text{Slope of line AB} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-4}{3}$$

$$\therefore \frac{3 + 5}{-5 - x} = \frac{-4}{3}$$

$$\Rightarrow \frac{8}{-5 - x} = \frac{-4}{3}$$

$\Rightarrow 20 + 4x = 24$

$\Rightarrow 4x = 24 - 20 = 4$

$\Rightarrow x = 1$

**68.** (1) AD : DB = 2 : 5

AD = $2k$, DB = $5k$

AB = $2k + 5x = 7k$

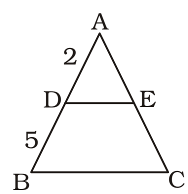
DE || BC

$\angle$ADE = $\angle$ABC

$\angle$AED = $\angle$ACB

By AA-Similarity,

$\Delta$ ABC ~ $\Delta$ ADE




$$\therefore \frac{\text{area } (\Delta ABC)}{\text{area } (\Delta ADE)} = \frac{AB^2}{AD^2}$$

$$\frac{\text{area } (\Delta ADE)}{\text{area } (\Delta ABC)} = \frac{(7k)^2}{(2k)^2}$$

$\Rightarrow$ area $\Delta$ABC = 98 cm$^2$

area ($\square$ BDEC) = 98 – 8

= 90 cm$^2$

$$\therefore \frac{\text{area } (\Delta ADE)}{\text{area } (\square BDEC)} = \frac{8}{90}$$

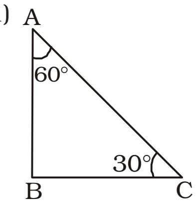
$$= \frac{4}{45} = 4 : 45$$

**69.** (3) $\sqrt{2}$ sec 45° – tan 30°

$$= \sqrt{2} \times \sqrt{2} - \frac{1}{\sqrt{3}}$$

$$= 2 - \frac{1}{\sqrt{3}} = \frac{2\sqrt{3} - 1}{\sqrt{3}}$$

**70.** (1)




$$\frac{1}{\sqrt{3}} \text{cosec C} = \frac{1}{\sqrt{3}} \text{ cosec } 30°$$

$$= \frac{1}{\sqrt{3}} \times 2 = \frac{2}{\sqrt{3}}$$

**71.** (4) cosec $\theta = \frac{25}{7}$

$$\therefore \cot\theta = \sqrt{\text{cosec}^2\theta - 1}$$

$$= \sqrt{\left(\frac{25}{7}\right)^2 - 1} = \sqrt{\frac{625}{49} - 1}$$

$$= \sqrt{\frac{625 - 49}{49}} = \sqrt{\frac{576}{49}} = \frac{24}{7}$$

**72.** (1) In year 2016, the inflation of country C was lower than that of previous year.

**73.** (3) Required per cent increase

$$= \frac{5 - 2}{2} \times 100$$

$$= \frac{3}{2} \times 100 = 150\%$$

**74.** (4) In 2015,

$$\frac{\text{Inflation of country C}}{\text{Inflation of country A}}$$

$$= \frac{8}{4} = 2 : 1$$

**75.** (4) Price index at the end of 2015

$$= \frac{200 \times 102}{100} = 204$$

Price index at the end of 2016

$$= \frac{204 \times 105}{100} = 214.2$$

**76.** (2) Here, the error lies in the wrong use of the preposition.

**Among** → when there are more than two persons/things.

**Look at the sentence :**

Distribute these sweets among your friends.

**Between** → when there are two persons/things

**Look at the sentence :**

Let it remain between you and me.

Hence, **took place between** ..... should be used here.

**77.** (3) **Round** = to go around a corner of a building; a bend in the road etc.

Here, purpose is evident. Hence, infinitive i.e. to round the bend ... should be used, not a gerund.

**78.** (2) **Aalias (Noun)** = used for indicating that a named person is also known as or more familiar under another specified name Eric Blair, alias George Orwell

**Option/alternative (Noun)** = choice; other possibility.

**Untrue (Adjective)** = false; not true

**79.** (1) **Quarrel (Noun)** = tiff; row; fight; argument

**Coral (Noun)** = a hard stony substance

**Moral (Noun)** = lesson; message

**Laurel (Noun)** = honour/praise for an achievement

**80.** (1) **Trash/litter (Noun)** = rubbish; refuse; junk

**Look at the sentence :**

Don't throw litter here, there and everywhere.

**Order (Verb)** = command; charge

**Possess (Verb)** = acquire; obtain

**System (Noun)** = structure; organization

**81.** (2) **Obliterate/annihilate (Verb)** = destory; wipe out; exterminate

He obliterated the memory from his mind.

**Construct (Verb)** = build; form

**revive (Verb)** = resuscitate; bring back to life

**Initiate (Verb)** = start; begin off

**82.** (3) **Skimp/scrimp (Verb)** = economize; be more economical

**Look at the sentence :**

I have scrimped and saved to give you a good education.

**Squander (Verb)** = waste; misspend; misuse

**Look at the sentence :**

He has squandered away all his wealth.

**Conserve (Verb)** = preserve; protect

**Curtail (Verb)** = reduce; cut; lessen

**83.** (2) **Quaff/imbibe/guzzle (Verb)** = gulp; devour; eat greedily

**Look at the sentence :**

He guzzled his ale.

**Starve (Verb)** = die of hunger; die from lack of food

**Look at the sentence :**

She left her animals to starve.

**Carouse (Verb)** = drink and make merry; go on a drinking bout

**84.** (2) To suddenly, feel very happy because something unpleasant has not happened or has ended

**Look at the sentence :**

We both heaved a sigh of relief when our mother left.

**85.** (1) **to be extremely happy**

**Look at the sentence :**

I am on cloud nine today.

**86.** (4) **Remember :** past tense is followed by past tense. So, the use of past perfect tense is apt and appropriate.

**87.** (2) Instead of a because/as/since clause, we sometimes use an adverbial participle clause with **being**.

**Being dashed** = as her was dashed

**88.** (1) **Plunge/submerge/capsize (Verb)** = go under water; sink

**89.** (4) **Flatter/compliment (Verb)** = praise; commend; admire

**Sanction (Verb)** = grant; permit

**90.** (4) **Thrashing** = hitting a person or animal hard many times as punishment.

**91.** (3) **Consensus (Noun)** = a general agreement

**94.** (2) **Structure :**

Subject + was/were + $V_3$ + by + Object

The whole neighbourhood was destroyed by the fire.

**95.** (2) The accused requested the judge to let him meet his children before he died.

It is direct speech of an imperative sentence.

Its indirect speech is made as follows :

⇒ 'to-infinitive' is used as a connector

⇒ 'said to' changes to requested/begged.

⇒ pronouns change as per $\frac{\text{SON}}{1\ 2\ 3}$

⇒ simple present (he dies) changes to simple past (he died).

**96.** (3) **That**

**that (determiner)** = used for identifying a specific person/thing observed or heard by the speaker

Look at that chap there.

**97.** (4) **Structure of sentence in Present Perfect :**

Subject + has/have + $V_3$

**98.** (3) **Fall into** = to start doing something, often without intending to.

Here, **help** will be followed by either a bare infinitive or a gerund.

**99.** (3) **Between** is used for two things.

**100.** (3) **Those (pronoun)** : plural of 'that'

Here, those means : the birds

❑❑❑

SET 27

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 18.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Hope : Despair :: Lunatic : ?
(1) Honest
(2) Hardworking
(3) Sane
(4) Stylish

**2.** Select the related letters from the given alternatives :
MOQ : NLJ :: SUW : ?
(1) IGE (2) CEG
(3) KJI (4) HFD

**3.** Select the related number from the given alternatives :
111 : 37 :: 123 : ?
(1) 41 (2) 31
(3) 21 (4) 71

**4.** Select the odd word from the given alternatives :
(1) Wall clock
(2) Painting
(3) Photo frame
(4) Carpet

**5.** Select the odd letters from the given alternatives :
(1) LMN (2) PPQ
(3) RST (4) VWX

**6.** Select the odd number from the given alternatives :
(1) 80 (2) 17
(3) 13 (4) 31

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
yes, rain, alive, subtle, ?
(1) airport (2) smoke
(3) inch (4) fabulous

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
Abcd, ghIJ, Mnop, stUV, Yzab, ?
(1) efGH (2) Efgh
(3) cdEF (4) efCD

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :

$1, 0.25, \frac{1}{9}, ?, 0.04, \frac{1}{36}$

(1) 0.0625 (2) 0.025

(3) $\frac{1}{8}$ (4) $\frac{1}{6}$

**10.** Eshan's birthday is on Friday 10th March. On what day of the week will be Shlok's birthday in the same year if Shlok was born on 25th September?
(1) Monday (2) Wednesday
(3) Friday (4) Thursday

**11.** The weights of 4 boxes are 70, 50, 30 and 90 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 220 (2) 240
(3) 210 (4) 170

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**SHORTING**
(1) THORN (2) NITRO
(3) NOISE (4) STING

**13.** If BAPTISM is coded as DCRVKUO, then how will TIN be coded as?
(1) VKP (2) EBC
(3) FDF (4) CLS

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
45 × 5 – 24 + 3 ÷ 80 = ?
(1) 100 (2) 52
(3) 1 (4) 82

**15.** If 5 \$ 125 = 25, 12 \$ 48 = 4 then what is the value of 4 \$ 24 = ?
(1) 34 (2) 35
(3) 6 (4) 5

**16.** Select the missing number from the given responses ;

| 13 | 7 | 17 |
|---|---|---|
| 17 | 23 | 19 |
| 221 | ? | 323 |

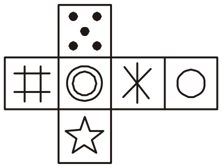
(1) 30 (2) 102
(3) 29 (4) 161

**17.** Two planes start from the same airport. A flies 50 km East. B flies 15 km North, then turns East and flies 20 km, then turns to its right and flies 15 km. Where is B with respect to A now?
(1) 30 km East
(2) 70 km East
(3) 30 km West
(4) 70 km West

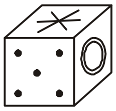
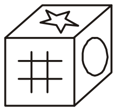
**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.
**Statement :** Should zoos be closed down?
**Argument I :** Yes, imprisoning animals is a crime.
**Argument II :** No, it is fine if some animals are kept in captivity for sake of entertainment.
(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

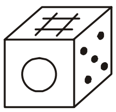
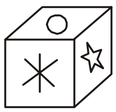
**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure ?

**Question Figure :**

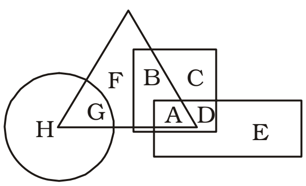


**Answer Figures :**

(1)  (2) 

(3)  (4) 

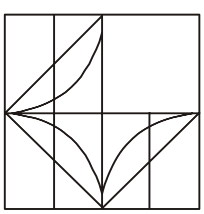
**20.** In the following figure, square represents Physicians, triangle represents cricket players, circle represents men and rectangle represents Indians. Which set of letters represents cricket players who are either Indians or men?



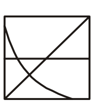
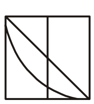

(1) H, F, D (2) A, B, E
(3) D, F, C (4) A, G

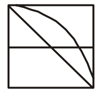
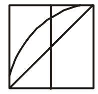
**21.** Which answer figure will complet the pattern in the question figure ?

**Question Figure :**



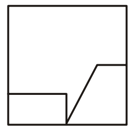
**Answer Figures :**

(1)  (2) 

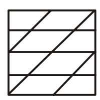
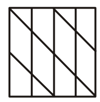
(3)  (4) 

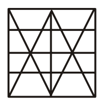
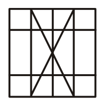
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



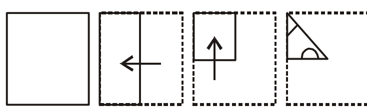
**Answer Figures :**

(1)  (2) 

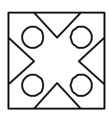
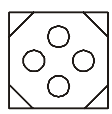
(3)  (4) 

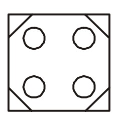
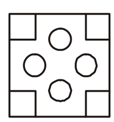
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



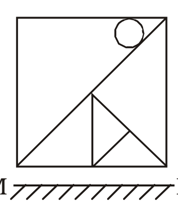
**Answer Figures :**

(1)  (2) 

(3)  (4) 

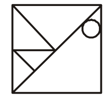
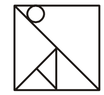
**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

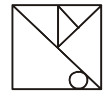
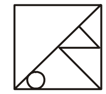
**Question Figure :**



M N

**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 42, 34 etc. and 'Z' can be represeted by 75, 86 etc. Similarly, you have to identify the set for the word **'RUBY'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | J | M | D | C | E |
| 1 | C | H | K | M | I |
| 2 | A | D | F | H | L |
| 3 | E | G | A | E | K |
| 4 | B | C | K | C | G |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | W | U | N | P | S |
| 6 | W | S | R | Z | W |
| 7 | Z | S | O | S | Y |
| 8 | X | Z | S | Y | R |
| 9 | O | U | S | U | U |

(1) 42, 31, 76, 68
(2) 00, 20, 57, 88
(3) 30, 12, 66, 67
(4) 67, 56, 40, 88

## GENERAL AWARENESS

**26.** From which of the following, is the GDP of a country not derived from?
(1) Agricultural sector
(2) Industrial sector
(3) International sector
(4) Service sector

**27.** ______ is the set of all possible combinations of the two inputs that yield the same maximum possible level of output.
(1) The Short Run
(2) The Long Run
(3) Isoquant
(4) Average product

**28.** ___________ means that the President of India can refer any matter that is of public importance or that which involves interpretation of Constitution to Supreme Court for advice.
(1) Original Jurisdiction
(2) Writ Jurisdiction
(3) Appellate Jurisdiction
(4) Advisory Jurisdiction

**29.** There are total ________ parliamentary seats (Rajya Sabha constituency) in Sikkim.
(1) 11 (2) 19
(3) 10 (4) 1

**30.** Dara Shikoh was killed in conflict with his brother
(1) Jahangir
(2) Aurangzeb
(3) Babur
(4) Shah Jahan

**31.** The Arabic work of al-Biruni that gave an account of the subcontinent is called
(1) Kitab - Al Hind
(2) Kitab - Al Bharat
(3) Pustak - Al Hind
(4) Pustak - Al Bharat

**32.** How many union territories does India have as of June 2017?
(1) 7 (2) 6
(3) 5 (4) 4

**33.** The northern plain of India is formed of __________.
(1) metamorphic soil
(2) igneous rocks
(3) alluvial soil
(4) old crystalline rocks

**34.** Lion, Leopard and Tiger are all species of which genus?
(1) Solanum (2) Panthera
(3) Felis (4) Tigris

**35.** __________ are made up of sclerenchymatous cells. These are generally absent in the primary phloem but are found in the secondary phloem.
(1) Xylem fibres
(2) Xylem parenchyma
(3) Phloem parenchyma
(4) Phloem fibres

**36.** What type of a body plan does coelenterates, ctenophores and echinoderms have?
(1) Annelida
(2) Radial
(3) Bilateral
(4) Platyhelminthes

**37.** If the speed of an object moving along a straight line is constant, its motion is said to be ________.
(1) Uniform
(2) Periodic
(3) Circular
(4) Non-uniform

**38.** The strength of a force is usually expressed by its
(1) Motion
(2) Direction
(3) Interaction
(4) Magnitude

**39.** _______ is not a storage device.
(1) iPod (2) Pen drives
(3) Linux (4) Flash Disks

**40.** Magnesium (Mg) + Oxygen ($O_2$) = ?
(1) $Mg_2O$ (2) $MgO_4$
(3) $O_2Mg$ (4) MgO

**41.** What is the reaction between an acid and a base called?
(1) Desalination
(2) Crystallisation
(3) Neutralisation
(4) Sublimation

**42.** According to an estimate, almost ________ percent forests have been lost in the tropics, compared to only 1 percent in the temperate region.
(1) 20 (2) 40
(3) 60 (4) 80

**43.** ___________ scheme launched by the Central Government is a new crop insurance scheme to boost farming sector in the country.
(1) Soil Health Card
(2) Shyama Prasad Mukherji Rurban Mission
(3) Pradhan Mantri Fasal Bima Yojana
(4) National R-URBAN Mission

**44.** Who discovered Proton?
(1) Ernest Rutherford
(2) Friedrich Miescher
(3) Henri Becquerel
(4) Henry Cavendish

**45.** Who is the winner of 2017 Indian Premier League (Cricket)?
(1) Mumbai Indians
(2) Rising Pune Supergiant
(3) Delhi Daredevils
(4) Sunrisers Hyderabad

**46.** In which city of India is Dhamek Stupa located?
(1) Pune (2) Delhi
(3) Varanasi (4) Hyderabad

**47.** Which of the following was the winner of the Grammy Awards 2016 "Song of the Year"?
(1) Alright
(2) Blank Space
(3) Girl Crush
(4) Thinking Out Loud

**48.** Which of the statements given below are correct?
1. The author of the novel 'Dodgers' is Don Winslow.
2. The author of the novel 'Forty Thieves' is Bill Beverly.
3. The author of the novel 'The Corrections' is Thomas Perry.

(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** What was Australia's rank in 2016 Human Development Index published by the United Nations Development Programme?
(1) 2 (2) 20
(3) 100 (4) 200

**50.** The Samjhauta Express runs between Delhi to which city in Pakistan?
(1) Karachi (2) Islamabad
(3) Quetta (4) Lahore

## QUANTITATIVE APTITUDE

**51.** What is the largest four digit number that is exactly divisible by 93?
(1) 9961 (2) 9971
(3) 9981 (4) 9951

**52.** A, B and C can finish a job working alone in 20, 30 and 60 days respectively. They all work together for 1 day, then A and B quit. How many days C working alone will take to finish the remaining part of the job?
(1) 60 (2) 54
(3) 6 (4) 27

**53.** What is the area (in sq. cm.) of a rectangle of perimeter 90 cm and breadth 20 cm?
(1) 500 (2) 400
(3) 250 (4) 450

**54.** If the selling price of an item is Rs. 9750 after getting a discount of 25%, then what was its marked price (in Rs.)?
(1) 13000 (2) 12187
(3) 14000 (4) 13187

**55.** If 3A = 2B = 4C; then what is A : B : C?
(1) 3 : 2 : 4 (2) 6 : 4 : 3
(3) 4 : 6 : 3 (4) 2 : 3 : 4

**56.** The average cost of 5 items in a shopping list is Rs. 650. If one more item whose cost is Rs. 1400 is added to the list what will be the new average (in Rs.)?
(1) 775 (2) 875
(3) 725 (4) 825

**57.** If a vendor sells apples at Rs. 170 per kg he suffers 15% loss. If he sells at Rs. 230 per kg, then what is his profit per cent ?
(1) 15 (2) 10
(3) 5 (4) 20

**58.** If 40 is 0.05% of $x$, then what is the value of $x$?
(1) 80000 (2) 8000
(3) 800 (4) 80

**59.** A taxi going at 90 km/hr takes 35 minutes to travel a certain distance. By how much should it increase its speed (in km/hr) to travel the same distance in 21 minutes?
(1) 60 (2) 150
(3) 120 (4) 90

**60.** If compound interest received on a certain amount in the 2nd year is Rs. 1200, what will be the compound interest (in Rs.) for the 4th year on the same amount at 10% p.a. rate of interest?
(1) 1452 (2) 1320
(3) 1552 (4) 1420

**61.** If $\frac{17}{3}+\frac{\left[3\left(2x-\frac{5}{3}\right)\right]}{2}=\frac{1}{6}$, then what is the value of $x$ ?
(1) 1 (2) 3
(3) –3 (4) –1

**62.** If $a + b = 5$ and $ab = 6$, then what is the value of $(a^3 + b^3)$ ?
(1) 32 (2) 38
(3) 35 (4) 34

**63.** The sum of a fraction and three times its reciprocal is $\frac{37}{10}$. What is the fraction?
(1) $\frac{5}{2}$ (2) $\frac{2}{5}$
(3) $\frac{5}{4}$ (4) $\frac{4}{5}$

**64.** The 4th term and 7th term of an arithmetic progression are 11 and –4 respectively. What is the 15th term?
(1) –49 (2) –44
(3) –39 (4) –34

**65.** What is the reflection of the point (5, – 1) in the line $y = 2$?
(1) (5, –5) (2) (–5, –5)
(3) (5, 5) (4) (–5, 5)

**66.** In what ratio is the segment joining points (2, 3) and (–2, 1) divided by the Y-axis?
(1) 1 : 2 (2) 1 : 1
(3) 3 : 1 (4) 2 : 3

**67.** What is the slope of the line $2x - 5y = 12$?
(1) $\frac{2}{5}$ (2) $\frac{5}{2}$
(3) $-\frac{2}{5}$ (4) $-\frac{5}{2}$

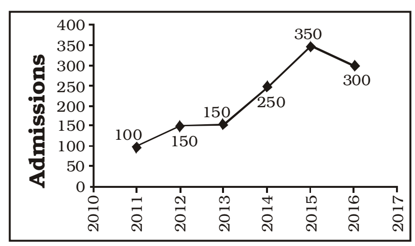
**68.** Triangle ΔXYZ is similar to ΔPQR. If XY : PQ = 5 : 1 and the area of ΔPQR is 5 sq cm, what is the area (in sq cm) of ΔXYZ?
(1) 125 (2) 120
(3) 100 (4) 64

**69.** What is the value of cot 60° – sec 30°?
(1) $-\frac{1}{3}$ (2) $-\frac{1}{\sqrt{3}}$
(3) $\frac{1}{\sqrt{3}}$ (4) $\frac{1}{3}$

**70.** ΔABC is right angled at B and m∠A = 30°. What is the length (in cm) of AB, if AC = 8 cm?
(1) $2\sqrt{3}$ (2) $4\sqrt{3}$
(3) $\frac{4}{\sqrt{3}}$ (4) $\frac{2}{\sqrt{3}}$

**71.** If $\cot\theta = \frac{24}{7}$, then what is the value of sec θ ?
(1) $\frac{7}{25}$ (2) $\frac{25}{24}$
(3) $\frac{8}{25}$ (4) $\frac{9}{25}$

**Directions (72–75) :** The line graph shows the record of number of admissions to a certain coaching centre from 2011 to 2016. Study the diagram and answer the following questions.




**72.** In how many years was the number of admissions greater than that of the previous year?
(1) 2 (2) 3
(3) 1 (4) 4

**73.** Ignoring year 2016 how many students took admission in the coaching centre since its inception in the year 2011?
(1) 1300 (2) 1200
(3) 900 (4) 1000

**74.** Admissions in the year 2014 grew by ________ per cent as compared to the previous year.
(1) 50 (2) 100
(3) 40 (4) 66.67

**75.** If fees charged by the coaching centre was Rs. 10000 for the first three years and Rs. 12000 for the next three years, then what is the total fees (in Rs. crores) collected by the coaching centre in the last six years?
(1) 1.48 (2) 1.38
(3) 1.28 (4) 1.18

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** They did nothing (1)/ that was down the (2)/ dignity of princess. (3)/No Error (4)

**77.** What are (1)/ you doing (2)/ by here? (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Do you _________ own a copy of Shakespeare's Hamlet?
(1) chance
(2) chances
(3) perchance
(4) by chances

**79.** A police detective often finds himself in the position of having to ________ between a lie and a truth.
(1) extinguish
(2) distinguish
(3) finish
(4) languish

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Commemorate**
(1) Opprobrium
(2) Reproach
(3) Disrepute
(4) Celebrate

**81. Plebiscite**
(1) Referendum
(2) Tyranny
(3) Despotism
(4) Monarchy

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Rampage**
(1) Binge (2) Frenzy
(3) Harmony (4) Turmoil

**83. Blasphemous**
(1) Pious
(2) Profane
(3) Sacrilegious
(4) Irreligious

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To have something on the brain**
(1) To be obsessed with something
(2) To be ready with an immediate smart witty reply
(3) To unable to solve a particularly difficult philosophical problem
(4) To think wistfully about past life

**85. Not one's cup of tea**
(1) To stop having breakfast
(2) To accept defeat even before attempting to take up the challenge
(3) To be satisfied with less
(4) Not one's choice or preference

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** The battle **(to rage)** for some time.
(1) is raging
(2) has been raged
(3) had been raging
(4) No Improvement

**87.** She glanced back to make sure she **(wasn't to be)** observed.
(1) wasn't be
(2) weren't being
(3) wasn't being
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. The crime of betraying one's country**
(1) Treason (2) Frankness
(3) Fidelity (4) Allegiance

**89. Fanatical and uncompromising pursuit of ideals**
(1) Nonpartisan
(2) Zealotry
(3) Neutral (4) Aloof

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Composure
(2) Cumposure
(3) Composore
(4) Cumposore

**91.** (1) Alliviate (2) Aleviate
(3) Alleviate (4) Aliviate

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. "Phew," said I, grabbing**
X. cheerfully round my head
Y. at the halo of flies
Z. which buzzed
(1) YZX (2) YXZ
(3) XZY (4) XYZ

**93. The investigations of the**
X. peculiar place in the economy of the body
Y. physiologist and the psychologist
Z. have revealed that the brain holds a
(1) YXZ (2) XZY
(3) XYZ (4) YZX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**The choir really enjoys that piece.**

(1) That piece are really enjoyed by the choir.
(2) That piece is really enjoyed by the choir.
(3) Enjoyment of that piece is done by the choir.
(4) Enjoying of that piece is done by the choir.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**Akash said, "Mahesh has gone home."**

(1) Akash said that Mahesh has gone home.
(2) Akash said then Mahesh had gone home .
(3) Akash said then Mahesh has gone home.
(4) Akash said that Mahesh had gone home.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

Most **(96)** of all to the rambler on avian lore intent is the fact that there are many species and genera that are peculiar to the West and **(97)** new to him, keeping him constantly on the 'qui vive'. **(98)** Colorado you will look in vain for the common blue jay, so abundant in all parts of the East; but you will be more **(99)** compensated by the presence of seven other species **(100)** the jay household.

**96.** (1) interesting
(2) interest
(3) interested
(4) interests

**97.** (1) therefore (2) because
(3) if (4) for

**98.** (1) On (2) In
(3) Into (4) Onto

**99.** (1) then (2) that
(3) than (4) this

**100.** (1) for (2) to
(3) of (4) off

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (3) | **2.** (4) | **3.** (1) | **4.** (4) |
| **5.** (2) | **6.** (1) | **7.** (1) | **8.** (1) |
| **9.** (1) | **10.** (1) | **11.** (1) | **12.** (3) |
| **13.** (1) | **14.** (3) | **15.** (3) | **16.** (4) |
| **17.** (3) | **18.** (1) | **19.** (3) | **20.** (4) |
| **21.** (2) | **22.** (3) | **23.** (2) | **24.** (3) |
| **25.** (4) | **26.** (3) | **27.** (3) | **28.** (4) |
| **29.** (4) | **30.** (2) | **31.** (1) | **32.** (1) |
| **33.** (3) | **34.** (2) | **35.** (4) | **36.** (2) |
| **37.** (1) | **38.** (4) | **39.** (3) | **40.** (4) |
| **41.** (3) | **42.** (2) | **43.** (3) | **44.** (1) |
| **45.** (1) | **46.** (3) | **47.** (4) | **48.** (*) |
| **49.** (2) | **50.** (4) | **51.** (4) | **52.** (2) |
| **53.** (1) | **54.** (1) | **55.** (3) | **56.** (1) |
| **57.** (1) | **58.** (1) | **59.** (1) | **60.** (1) |
| **61.** (4) | **62.** (3) | **63.** (1) | **64.** (2) |
| **65.** (3) | **66.** (2) | **67.** (1) | **68.** (1) |
| **69.** (2) | **70.** (2) | **71.** (2) | **72.** (2) |
| **73.** (4) | **74.** (4) | **75.** (1) | **76.** (2) |
| **77.** (3) | **78.** (3) | **79.** (2) | **80.** (4) |
| **81.** (1) | **82.** (3) | **83.** (1) | **84.** (1) |
| **85.** (4) | **86.** (3) | **87.** (2) | **88.** (1) |
| **89.** (2) | **90.** (1) | **91.** (3) | **92.** (1) |
| **93.** (4) | **94.** (2) | **95.** (4) | **96.** (1) |
| **97.** (1) | **98.** (2) | **99.** (2) | **100.** (3) |

## EXPLANATIONS

**1.** (3) Hope and Despair are antonymous to each other. Similarly Lunatic and sane are antonymous to each other.

**2.** (4) M O Q
↓ ↓ ↓
N L J

Pairs of opposite letters.
Similarly,

S U W
↓ ↓ ↓
H F D

**3.** (1) $\underbrace{111 : 37}_{\div 3} :: \underbrace{123 : [41]}_{\div 3}$

**4.** (4) Except 'Carpet' all others are related to wall.

**5.** (2) $L \xrightarrow{+1} M \xrightarrow{+1} N$

$R \xrightarrow{+1} S \xrightarrow{+1} T$

$V \xrightarrow{+1} W \xrightarrow{+1} X$

But,

$P \xrightarrow{+0} P \xrightarrow{+1} Q$

**6.** (1) Except the number '80' all others are prime numbers.

**7.** (1) In each next term, the number of letters is increasing by 1.
yes ⇒ 3 letters
rain ⇒ 4 letters
alive ⇒ 5 letters
subtle ⇒ 6 letters
airport ⇒ 7 letters

**8.** (1) Alternately, the first letter and the last two letters are written in the Capital letters.

$A \xrightarrow{+6} g \xrightarrow{+6} M \xrightarrow{+6} s \xrightarrow{+6} Y \xrightarrow{+6} e$

$b \xrightarrow{+6} h \xrightarrow{+6} n \xrightarrow{+6} t \xrightarrow{+6} z \xrightarrow{+6} f$

$c \xrightarrow{+6} I \xrightarrow{+6} o \xrightarrow{+6} U \xrightarrow{+6} a \xrightarrow{+6} G$

$d \xrightarrow{+6} J \xrightarrow{+6} p \xrightarrow{+6} V \xrightarrow{+6} b \xrightarrow{+6} H$

**9.** (1) $0.25 = \frac{25}{100} = \frac{1}{4} = \frac{1}{(2)^2}$

$\frac{1}{9} = \frac{1}{(3)^2}$

$0.04 = \frac{4}{100} = \frac{1}{25} = \frac{1}{(5)^2}$

$\frac{1}{36} = \frac{1}{(6)^2}$

$? = 0.0625 = \frac{625}{10000}$

$= \frac{1}{16} = \frac{1}{(4)^2}$

$\therefore \frac{1}{(2)^2}, \frac{1}{(3)^2}, \frac{1}{(4)^2}, \frac{1}{(5)^2}, \frac{1}{(6)^2}$

**10.** (1) Number of days from 10th March to 25th September
= 21 + 30 + 31 + 30 + 31 + 31 + 25
= 199 days
= 28 weeks 3 days
∴ 25th September
⇒ Friday + 3 = Monday

**11.** (1) Possible weights of combinations of boxes :

(i) 70 + 50 = 120
(ii) 70 + 30 = 100
(iii) 70 + 90 = 160
(iv) 50 + 30 = 80
(v) 50 + 90 = 140
(vi) 30 + 90 = 120
(vii) 70 + 50 + 30 = 150
(viii) 70 + 50 + 90 = 210
(ix) 70 + 30 + 90 = 190
(x) 70 + 50 + 30 + 90 = 240
(xi) 50 + 30 + 90 = 170

**12.** (3) There is no 'E' letter in the given word. Therefore, the word NOISE cannot be formed.

S [HORT] I [N] G ⇒ THORN

S H [ORTIN] G ⇒ NITRO

[S] H O R [TING] ⇒ STING

**13.** (1) B A P T I S M (each +2) → D C R V K U O

Therefore,

T I N (each +2) → V K P

**14.** (3)

| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

45 × 5 – 24 + 3 ÷ 80 = ?
⇒ ? = 45 ÷ 5 + 24 × 3 – 80
⇒ ? = 9 + 72 – 80 = 1

**15.** (3) $5 \$ 125 = \frac{125}{5} = 25$

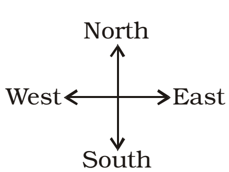
$12 \$ 48 = \frac{48}{12} = 4$

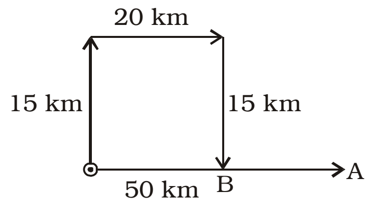
Therefore,

$4 \$ 24 = \frac{24}{4} = 6$

**16.** (4) First Column
13 × 17 = 221
Third Column
17 × 19 = 323
Second Column
7 × 23 = 161

**17.** (3)




B is 30 km west of A.

**18.** (1) Only argument I seems to be strong. It is not proper to imprison animals for the sake of entertainment.

**19.** (3) After folding the figure :

[#] lies opposite [*].

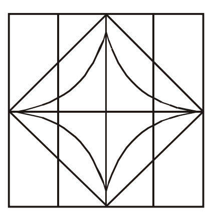
[⁙] lies opposite [☆].

[◎] lies opposite [○].

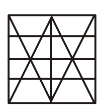
If [#] is on the top, [○] cannot be on the front surface.

**20.** (4) Cricket players who are Indians can be represented by the letter present in the triangle and the rectangle. Such letter is 'A'.
Cricket players who are men can be represented by the letter present in the triangle and the circle. Such letter is 'G'.

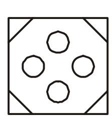
**21.** (2)



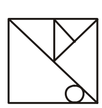
**22.** (3)



**23.** (2)



**24.** (3)



**25.** (4) R = 67, 89
U = 56, 96, 98, 99
B = 40
Y = 79, 88

| Option | R | U | B | Y |
|---|---|---|---|---|
| (1) | 42 | 31 | 76 | 68 |
| (2) | 00 | 20 | 57 | 88 |
| (3) | 30 | 12 | 66 | 67 |
| (4) | 67 | 56 | 40 | 88 |

**26.** (3) The eight industry sectors are considered in estimating GDP such as Agriculture, forestry, and fishing; Mining and quarrying; Manufacturing; Electricity, gas and water supply; Construction; Trade, hotels, transport and communication; Financing, insurance, real estate and business services and Community, social and personal services.

**27.** (3) The isoquant curve is a contoured line that is drawn through points that produce the same quantity of output, while the quantities of inputs usually two or more are changed. The mapping of the isoquant curve addresses cost minimization problems for producers.

**28.** (4) The Supreme Court has special advisory jurisdiction in matters which may specifically be referred to it by the President of India under Article 143 of the Constitution. The President may seek the opinion of the Supreme Court on any question of law or fact of public importance on which he thinks it expedient to obtain such an opinion. On such reference from the President, the Supreme Court, after giving it such hearing as it deems fit, may report to the President its opinion thereon.

**29.** (4) The Rajya Sabha is the upper house of the Parliament of India. Sikkim elects 1 seat and it is indirectly elected by the state legislators of Sikkim, since year 1976. The number of seats, allocated to the party, are determined by the number of seats, a party possesses during nomination and the party nominates a member to be voted on.

**30.** (2) Dara Shukoh, was the eldest son of the fifth Mughal emperor Shah Jahan. He was favoured as a successor by his father, Shah Jahan and his older sister, Princess Jahanara Begum, but was defeated and later killed by his younger brother, Aurangzeb in a bitter struggle for the imperial throne.

**31.** (1) Alberuni stayed in Mahmud of Ghazni's court and wrote the famous Kitab-al-Hind, an account on India. Al-Biruni's Kitab-ul-Hind, written in Arabic, is simple and lucid. It is a voluminous text, divided into 80 chapters on subjects such as religion and philosophy, festivals, astronomy, alchemy, manners and customs, social life, weights and measures, iconography, laws and metrology.

**32.** (1) Union Territories are administrated by the President acting to such extent, as he thinks fit, through an Administrator appointed by him. Administrators of Andaman and Nicobar Islands, Delhi and Puducherry are designated as Lieutenant Governors. The Governor of Punjab is concurrently the Administrator of Chandigarh. The Administrator of Dadra and Nagar Haveli is concurrently the Administrator of Daman and Diu. Lakshadweep has a separate Administrator. The National Capital Territory of Delhi and Union Territory of Puducherry each have a legislative assembly and council of ministers. There are 7 UTs in India.

**33.** (3) Alluvial soils are widespread in the northern plains and the river valleys. Alluvial soils is are formed by the deposits of the sediments brought by rivers. Most of the rivers originate from the Himalayas and bring along high amount of sediments with them. The soil is made up of particles like silt, sand and clay.

**34.** (2) Panthera is a genus within the Felidae family that was named and first described by the German naturalist Oken in 1816. The British taxonomist Pocock revised the classification of this genus in 1916 as comprising the species lion, tiger, jaguar, and leopard on the basis of cranial features.

**35.** (4) Phloem is a complex permanent tissue, which is specialized for the conduction of food and other organic substances. Phloem fibres are represented by the dead sclerenchyma fibres that are found in between the sieve tubes. They are meant only for providing mechanical support.

**36.** (2) The organism can be divided into similar halves by passing a plane at any angle along a central axis, characteritic of sessile and bottom-dwelling animals, as the seaanemone and starfish. In the animal kingdom, there are two broad phyla that exhibit radial symmetry : One of these is cnidarians, which include jellyfish, anemones, and corals. Jellyfish exhibit radial symmetry in four points around its center. Also, echinoderms, such as sea stars, urchins, and sea cucumbers.

**37.** (1) Uniform motion is defined as the motion of an object in which the object travels in a straight line and its velocity remains constant along that line as it covers equal distances in equal intervals of time, irrespective of the length of the time. If a body is involved in rectilinear motion and the motion is uniform, then the acceleration of the body must be zero.

**38.** (4) A force can be larger or smaller than the other force. The strength of a force is expressed by its magnitude. A force has both magnitude and direction, making it a vector quantity. It is measured in the SI unit of newtons and represented by the symbol F.

**39.** (3) Linux is a name that broadly denotes a family of free and open-source software operating systems (OS) built around the Linux kernel. The defining component of a Linux distribution is the Linux kernel, an operating system kernel first released on September 17, 1991 by Linus Torvalds.

**40.** (4) Magnesium and Oxygen are the reactants and Magnesium Oxide is the product. Magnesium has valency 2, Oxygen has valency 2, so MgO is the formula for Magnesium Oxide.

**41.** (3) Neutralization is a chemical reaction in which an acid and a base react quantitatively with each other. A neutralisation involving an acid and a base (or alkali) always produces salt and water. The aim of neutralisation is to modify an acid or base water flow to a neutral pH (approximately 7).

**42.** (2) According to an estimate, 40 percent forests have lost in tropics compared to only 1 percent in the temperate region.

**43.** (3) The Pradhan Mantri Fasal Bima Yojana was launched in April 2016, compensates farmers for any losses in crop yield. In the event of a crop loss, the farmer will be paid based on the difference between the threshold yield and actual yield. The threshold yield is calculated based on average yield for the last seven years and the extent of compensation is set according to the degree of risk for the notified crop. The scheme is compulsory for farmers who have availed of institutional loans.

**44.** (1) Proton is particle found in a nucleus with a positive charge. The word proton is Greek for "first" and this name was given to the hydrogen nucleus by Ernest Rutherford in 1920. The existence of the proton had been theorized in 1815 by William Prout.

**45.** (1) The 2017 season of the Indian Premier League, also known as IPL 10, was the

tenth edition of the IPL, a professional Twenty20 cricket league established by the BCCI in 2007. Mumbai Indians won by 1 run against Rising Pune Supergiant in the final, winning their third title. Krunal Pandya of Mumbai Indians was declared man of the match.

**46.** (3) Dhamek Stupa is the most noticeable structure in Sarnath, near Varanasi. Originally built in 249 BCE during the reign of king Ashoka of the Maurya Dynasty, this massive and prominent structure has over time gone through several expansions and additions. The significance of this sacred place is that it marks the spot where Lord Buddha preached the first sermon to his five disciples after attaining enlightenment in Bodh Gaya.

**47.** (4) 'Thinking Out Loud' received nominations for Grammy Award for Record of the Year, Song of the Year and Best Pop Solo Performance at the 58th Grammy Awards, winning the latter two.

**48.** (*) Dodgers is a novel by Bill Beverly.

- Forty Thieves is a novel by Thomas Perry.
- The Corrections is a 2001 novel by American author Jonathan Franzen.

**49.** (2) Australia has been ranked as the second-best country in the world for its quality of life as per Human Development Index that assessed economic, education and life-expectancy data. The top three rankings, Norway, Australia and Switzerland.

**50.** (4) The Samjhauta Express is a train between Delhi and Attari in India and Lahore in Pakistan. The train was started on 22 July, 1976 following the Shimla Agreement and ran between Amritsar and Lahore, a distance of about 42 km.

**51.** (4) Largest 4 digit number = 9999
Dividing 9999 by 93, remainder = 48
Required number = 9999 – 48 = 9951

**52.** (2) (A + B + C)'s one day's work

$= \frac{1}{20} + \frac{1}{30} + \frac{1}{60}$

$= \frac{3+2+1}{60} = \frac{6}{60} = \frac{1}{10}$

Remaining work $= 1 - \frac{1}{10}$

$= \frac{9}{10}$ th part

C alone can do the remaining work in

$= \frac{9}{10} \times 60 = 54$ days

**53.** (1) Perimeter of rectangle = 90 cm
$\therefore$ 2 (length + breadth) = 90
$\Rightarrow$ 2 (length + 20) = 90
$\Rightarrow$ Length = 45 – 20 = 25 cm
Area of rectangle
= length × breadth
= 25 × 20 = 500 sq. cm.

**54.** (1) Let the marked price be ₹ $x$.
According to the question,
(100 – 25)% of $x$ = 9750
$\Rightarrow$ 75% of $x$ = 9750

$\Rightarrow x \times \frac{75}{100} = 9750$

$\Rightarrow x = \frac{9750 \times 100}{75} =$ ₹ 13000

**55.** (3) 3A = 2B = 4C
L.C.M. of 3, 2 and 4 = 12

$\therefore \frac{3A}{12} = \frac{2B}{12} = \frac{4C}{12}$

$\Rightarrow \frac{A}{4} = \frac{B}{4} = \frac{C}{4}$

$\Rightarrow$ A : B : C = 4 : 6 : 3

**56.** (1) New average

$= \frac{5 \times 650 + 1400}{6}$

$= \frac{3250 + 1400}{6} = \frac{4650}{6} =$ ₹ 775

**57.** (1) Cost Price of apples

$= \frac{100}{85} \times 170 =$ ₹ 200 per kg

Now,
$\therefore$Selling Price of apples = ₹ 230 per kg
Profit per cent

$= \frac{230 - 200}{200} \times 100$

$= \frac{30 \times 100}{200} = 15\%$

**58.** (1) 40 = 0.05% of $x$

$\Rightarrow 40 = x \times \frac{0.05}{100}$

$\Rightarrow x = \frac{40 \times 100}{0.05}$

$= \frac{40 \times 100 \times 100}{5} = 80000$

**59.** (1) Distance = speed × Time

$= \left(90 \times \frac{35}{60}\right)$ km. $= \frac{105}{2}$ km.

$\therefore$ Required speed $= \frac{\frac{105}{2}}{\frac{21}{60}}$

$= \frac{105}{2} \times \frac{60}{21} = 150$ km/hr.

Increase in speed
= (150 – 90)
= 60 km/hr

**60.** (1) We have to find the amount of Rs. 1200 in 2 years.
$\therefore$ C.I. in the fourth year

$= P\left(1 + \frac{R}{100}\right)^2$

$= 1200\left(1 + \frac{10}{100}\right)^2$

$= 1200 \times \frac{11}{10} \times \frac{11}{10} =$ Rs. 1452

**61.** (4) $\frac{17}{3} + \frac{\left[3\left(2x - \frac{5}{3}\right)\right]}{2} = \frac{1}{6}$

On multiplying by 2 on both sides,

$\Rightarrow \frac{34}{3} + 6x - 5 = \frac{2}{6}$

$\Rightarrow 6x = 5 + \frac{1}{3} - \frac{34}{3}$

$\Rightarrow 6x = \frac{15 + 1 - 34}{3} = \frac{-18}{3} = -6$

$\Rightarrow x = \frac{-6}{6} = -1$

**62.** (3) $a + b = 5$, $ab = 6$

$\therefore a^2 + b^2 = (a + b)^2 - 2ab$
$= (5)^2 - 2 \times 6$
$= 25 - 12 = 13$
$\therefore a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$
$= (5)(13 - 6)$
$= 5 \times 7 = 35$

**63.** (1) Let the fraction be $x$.

$\therefore$ reciprocal $= \frac{1}{x}$

According to the question,

$x + \frac{3}{x} = \frac{37}{10}$

$\Rightarrow \frac{x^2 + 3}{x} = \frac{37}{10}$

$\Rightarrow 10x^2 + 30 = 37x$
$\Rightarrow 10x^2 - 37x + 30 = 0$
$\Rightarrow 10x^2 - 25x - 12x + 30 = 0$
$\Rightarrow 5x(2x - 5) - 6(2x - 5) = 0$
$\Rightarrow (2x - 5)(5x - 6) = 0$

$\therefore 2x - 5 = 0 \Rightarrow x = \frac{5}{2}$;

$5x - 6 = 0 \Rightarrow x = \frac{6}{5}$

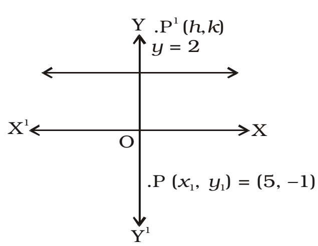
**64.** (2) Let first term of arithmetic series be and $d$ be its common difference.

$\because a_n = a + (n - 1)d$
$\therefore a + 3d = 11$ .... (i)
$a + 6d = -4$ ..... (ii)
By equation (i) – (ii),

$a + 3d = 11$
$a + 6d = -4$
$-\quad -\quad\quad +$
$-3d = 15 \Rightarrow d = -5$

$-3d = 15 \Rightarrow d = -5$
$a + 3d = 11$
$\Rightarrow a - 15 = 11 \Rightarrow a = 26$
$\therefore$ 15th term $= a + 14d$
$= 26 + 14 \times (-5)$
$= 26 - 70 = -44$

**65.** (3)



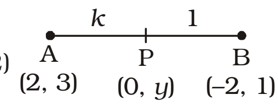

$k$-co-ordinate remains same
Reflection of point (5, –1) in the line $y - 2 = 0$.

$k - y_1 = -2(y_1 - y)$

$\Rightarrow \frac{k+1}{1} = \frac{-2(-1-2)}{1}$

$\Rightarrow k + 1 = 6$
$\Rightarrow k = 6 - 1 = 5$
Reflection = (5, 5)

**66.** (2)




Let the required ratio be $k : 1$.

$\therefore 0 = \frac{k(-2) + 1 \times 2}{k + 1}$

$\left(\because x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}\right)$

$\Rightarrow -2k + 2 = 0$
$\Rightarrow -2k = -2$
$\Rightarrow k = 1$
Required ratio = 1 : 1

**67.** (1) $2x - 5y = 12$

$\Rightarrow 5y = 2x - 12$

$\Rightarrow y = \frac{2}{5}x - \frac{12}{5}$ $(\because y = mx + c)$

Slope of this line $= m = \frac{2}{5}$

**68.** (1) $\Delta XYZ \sim \Delta PQR$

$\frac{\text{Area of }\Delta XYZ}{\text{Area of }\Delta PQR} = \frac{(XY)^2}{(PQ)^2}$

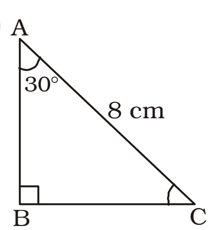
$\frac{\text{Area of }(\Delta XYZ)}{5} = \frac{(5)^2}{(1)^2}$

Area of $(\Delta XYZ) = 25 \times 5$
$= 125$ cm²

**69.** (2) cot 60° – sec 30°

$= \frac{1}{\sqrt{3}} - \frac{2}{\sqrt{3}} = \frac{-1}{\sqrt{3}}$

**70.** (2)




$\cos 30° = \frac{AB}{AC}$

$\Rightarrow \frac{\sqrt{3}}{2} = \frac{AB}{8}$

$AB = \frac{8\sqrt{3}}{2} = 4\sqrt{3}$ cm

**71.** (2) $\cot\theta = \frac{24}{7}$

$\tan\theta = \frac{7}{24}$

$\therefore 1 + \tan^2\theta = 1 + \frac{49}{576}$

$\Rightarrow \sec^2\theta = \frac{576 + 49}{576}$

$\therefore \sec\theta = \sqrt{\frac{625}{576}} = \frac{25}{24}$

**72.** (2) In 3 years the number of admissions is greater than the previous year.
Required years ⇒ 2012, 2014 and 2015

**73.** (4) Ignoring 2016, the number of students who took admission since its inception in year 2011
= 100 + 150 + 150 + 250 + 350
= 1000

**74.** (4) Percentage increase in admission in 2014as compared to previous year

$= \frac{250 - 150}{150} \times 100$

$= \frac{100 \times 100}{150} = 66.67\%$

**75.** (1) Total fees collected by the coaching centre in last 6 years
= 400 × 10000 + 900 × 12000
= (40 + 108) × 100000
= 14800000
= 1.48 crores

**76.** (2) Use 'below' in place of down.
**Below (preposition)** = lower than
**Down (preposition)** = from a higher to a lower point
So, correct expression ⇒ below the dignity of princes

**77.** (3) Here, the use of 'by' is superfluous.
correct expression → doing here ?

**78.** (3) **Perchance (Adverb)** = by some chance; perhaps; by any chance

**Look at the sentence :**
We dare not go ashore lest we should perchance fall into some snare.

**79.** (2) **Extinguish (Verb)** = blow out; put out
**Distinguish (Verb)** = differentiate
**Finish (Verb)** = complete; end
**Languish (Verb)** = weaken; grow weak

**80.** (4) **Commemorate/celebrate (Verb)** = pay homage to; honour
**Look at the sentence :**
The victory was commemorated in songs.
**Reproach (Verb)** = scold; rebuke
**Disrepute (Noun)** = disgrace; shame
**Opprobrium (Noun)** = abuse; criticism

**81.** (1) **Plebiscite/referendum (Noun)** = vote; poll
**Look at the sentence :**
The government will hold a plebiscite for the approval of constitutional reforms.
**Monarchy/tyranny/despotism (Noun)** = absolute power; autocracy

**82.** (3) **Turmoil/rampage (Noun)** = agitation; wildness; berserk
**Look at the sentence :**
The demonstrators went on rampage and destroyed public property.
**Harmony (Noun)** = peace; peacefulness; agreement
**Look at the sentence :**
Man and machine in perfect harmony.
**Binge (Noun)** = a period of excessive indulgence in an activity

**83.** (1) **Blasphemous/irreligious/profane/sacrilegious (Adjective)** = impious; ungodly blasphemous and heretical talk
**Pious (Adjective)** = holy; venerated
**Look at the sentence :**
Haridwar is a pious city.

**84.** (1) **to be obsessed with something**
**Look at the sentence :**
You have got ears on the brain, can't we talk about something else for a change ?

**85.** (4) **not one's choice or preference**
**Look at the sentence :**
French is not my cup of tea.

**86.** (3) had been raging
Past perfect continuous tense: It indicates a continuous action that started in the past continued upto some point in the past.
It is formed as follows :
Sub + had been + $V_1$ + ing + obj + for/since...

**87.** (2) **wasn't being**
**wasn't being** : used in passive voice of past continuous tense. The passive voice is formed as follows :
Sub + was being/were being + $V_3$ + by + obj...

**88.** (1) **Fidelity/allegiance (Noun)** = loyalty; obedience
**Frankness (Noun)** = The quality of being open; honest and direct in speech

**89.** (2) **Neutral/non-partisan (Adjective)** = not biased or partisan
**Aloof (Adjective)** = indifferent; distant; detached

**90.** (1) Correct spelling is : composure

**91.** (3) Correct spelling is : alleviate

**94.** (2) That piece is really enjoyed by the chair. It is active voice of simple present tense.
Its passive voice is formed as follows :
Subject + is/am/are + $V_3$ + by + obj...

**95.** (4) Akash said that Mahesh had gone home. It is direct speech of an assertive sentence.
Its indirect speech is formed as follows :
⇒ 'said without an object' remains as it is
⇒ connector 'that' is used
⇒ Present perfect changes to past perfect.

**96.** (1) **most interesting** = superlative degree of interesting; it means arousing a feeling of interest of the highest degree.

**97.** (1) **Therefore (adverb)** = for that reason; so; as a result

**98.** (2) Colorado → a US state
**in (preposition)** : indicates a location; for a big area/city, we use 'in'.
**Into (preposition)** : shows motion/movement
**Look at the sentence :**
The teacher walked into the classroom
**On (preposition)** : indicates location and shows no movement
**Look at the sentence :**
The basket is on the table.
**Onto (preposition)** : has the word 'to' in it.
**Look at the sentence :**
So its meaning includes the sense of movement towards something.
**Look at the sentence :**
(i) She drove her car on the sidewalk.
(ii) She drove her car onto the sidewalk.
Sentence (i) shows where she was driving.
Sentence (ii) shows that she started somewhere else and moved in the direction of the sidewalk, where she ended up.

**99.** (2) 'Than' is used with a comparative degree and more is the comparative degree of much/many.
So, **than** is apt and appropriate.

**100.** (3) **Of (preposition)** : shows belongingness
**For example :**
Legs of the table, car of my father.

❑❑❑

# SET 28

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 18.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
School : Teacher :: Court : ?
(1) Lawyer (2) Play
(3) Tennis (4) Justice

**2.** Select the related letters from the given alternatives :
EGI : BDF :: KMO : ?
(1) GIK (2) MOQ
(3) HJL (4) QSU

**3.** Select the related number from the given alternatives :
5 : –10 :: –8 : ?
(1) 16 (2) –16
(3) 13 (4) –13

**4.** Select the odd word from the given alternatives :
(1) Knife (2) Fork
(3) Plate (4) Spoon

**5.** Select the odd letters from the given alternatives :
(1) AEI (2) JNR
(3) SWA (4) FHJ

**6.** Select the odd number from the given alternatives :
(1) 169 (2) 421
(3) 529 (4) 289

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
hello, lower, error, organ, tense, ?
(1) night (2) rapture
(3) senile (4) watch

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
XXXOXXX, XXXXOXX, XXOXXXX, XXXXXOX, XOXXXXX, ?
(1) XXXXXXO
(2) OXXXXXXO
(3) XXXOXXX
(4) XXXXXX

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :

$\frac{3}{5}$, 1.4, $\frac{11}{5}$, ? , $\frac{19}{5}$, 4.6

(1) $\frac{14}{5}$ (2) 3.2
(3) $\frac{16}{5}$ (4) 3

**10.** Devansh's birthday is on Friday 14th April. On what day of the week will be Rohan's Birthday in the same year if Rohan was born on 20th September?
(1) Tuesday (2) Friday
(3) Thursday (4) Wednesday

**11.** The weights of 4 boxes are 20, 40, 80 and 90 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 220 (2) 230
(3) 150 (4) 210

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**PREACHER**
(1) RECAP (2) PARCH
(3) PEACH (4) CARES

**13.** If MIGRANT is coded as LHFQZMS, then how will GEL be coded as?
(1) QXK (2) FDK
(3) IXZ (4) IFG

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
27 × 3 ÷ 30 + 5 – 125 = ?
(1) 69 (2) 67
(3) –15 4) –16

**15.** If 11\$25 = 18, 12\$20 = 16 then what is the value of 4\$50 = ?
(1) 42 (2) 17
(3) 27 (4) 37

**16.** Select the missing number from the given responses :

| 21 | 27 | 29 |
|---|---|---|
| ? | 96 | 142 |
| 57 | 69 | 113 |

(1) 46 (2) 69
(3) 29 (4) 78

**17.** P and Q start cycling from the same point. P cycles 18 km North, then turns to her right and cycles 3 km. Q cycles 9 km East, then turns North and cycles 10 km North, then turns left and cycles 6 km. Where is Q now with respect to the position of P?
(1) 8 km South
(2) 8 km North
(3) 28 km South
(4) 28 km North

**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.

**Statement**

Should rock shows be allowed to run till midnight at tourist places?

**Arguments**

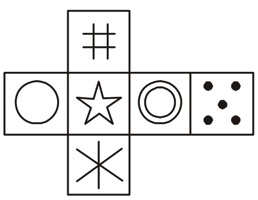
I. Yes, more tourists arrive due to rock shows. Tourism is good for local economy.

II. No, local traditions are harmed due to tourism.

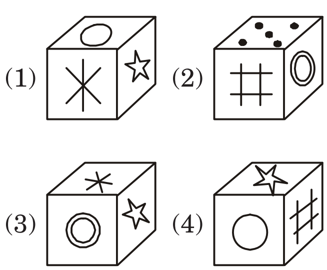
(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

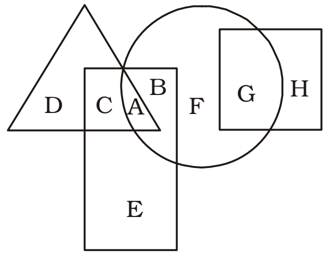
**Question Figure :**



**Answer Figures :**



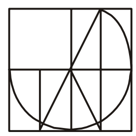
**20.** In the following figure, square represents Therapists, triangle represents Geneticists, circle represents yoga practitioners and rectangle represents Fathers. Which set of letters represents yoga practitioners who are neither geneticists nor fathers?



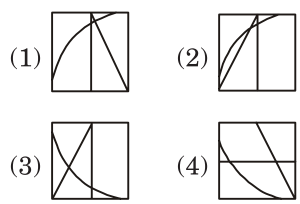

(1) C,B (2) E,A
(3) G,C (4) F,G

**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

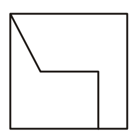


**Answer Figures :**

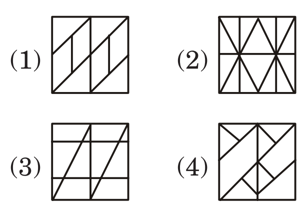


**22.** From the given answer figures, select the one in which the question figure is hidden/ embedded.

**Question Figure :**

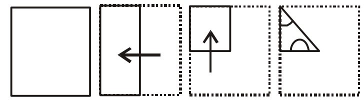


**Answer Figures :**

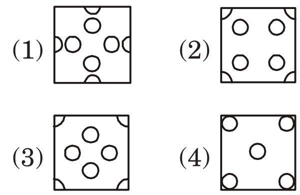


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures :**

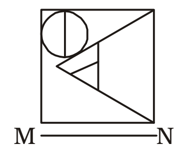


**Answer Figures :**

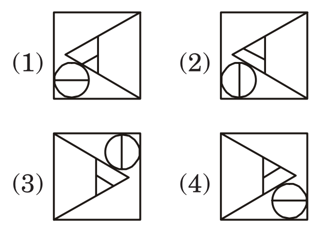


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 34, 42 etc and 'Z' can be represented by 78, 87 etc. Similarly, you have to identify the set for the word 'REAL'.

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | H | H | D | J | L |
| 1 | E | J | C | A | L |
| 2 | D | H | E | K | I |
| 3 | C | A | A | E | K |
| 4 | B | D | K | C | G |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | Y | Y | V | R | S |
| 6 | U | R | R | Z | U |
| 7 | W | P | N | Z | S |
| 8 | R | P | Z | Y | Y |
| 9 | P | S | N | R | V |

(1) 21, 10, 85, 96
(2) 85, 10, 31, 04
(3) 14, 02, 58, 88
(4) 20, 20, 77, 56

## GENERAL AWARENESS

**26.** The ______ exchange rate is the price of one unit of foreign currency in terms of domestic currency.
(1) Artificial (2) Nominal
(3) Fixed (4) Real

**27.** ______ of an input is defined as the change in output per unit of change in the input when all other inputs are held constant.
(1) Marginal product
(2) Production function
(3) Total product
(4) Average product

**28.** "Trade unions" is listed in the ______ list given in the Seventh Schedule of the Constitution of India.
(1) Union
(2) State
(3) Global
(4) Concurrent

**29.** ______ writ is issued by a higher court (High Court or Supreme Court) when a lower court has considered a case going beyond its jurisdiction.
(1) Habeas Corpus
(2) Mandamus
(3) Prohibition
(4) Quo Warranto

**30.** Arrest of ______ in 1930 led to angry demonstrations in streets of Peshawar.
(1) Abdul Ghaffar Khan
(2) Abul Kalam Azad
(3) Zakir Hussain
(4) Muzaffar Ahmed

**31.** The ______ were the successors of Timur, the ruler of Iran, Iraq and modern-day Turkey.
(1) Rajputs (2) Khaljis
(3) Mughals (4) Tughluq

**32.** Beyond the _____, the Himalayas bend sharply to the south and spread along the eastern boundary of India.
(1) Zoji La Pass
(2) Dihang gorge
(3) Bhutan border
(4) Nepal border

**33.** The National Highway 1A connects Leh to Kashmir Valley through the _____ pass.
(1) Khyber
(2) Zoji la
(3) Nathula
(4) Karakoram

**34.** In the names Mangifera indica (mango), Solanum tuberosum (potato) and Panthera leo (lion), the terms Mangifera, Solanum and Panthera represent the higher level of?
(1) Taxon
(2) Taxonomic Hierarchy
(3) Specific Epithet
(4) Binomial Nomenclature

**35.** Which of the following is one of the commercial products obtained from Gelidium and Gracilaria and are used to grow microbes and in preparations of ice-creams and jellies?
(1) Agar (2) Chlorella
(3) Spirullina
(4) Gymnosperms

**36.** Taenia (Tapeworm), Fasciola (Liver fluke) are examples of which Phylum?
(1) Coelenterata
(2) Platyhelminthes
(3) Annelida (4) Arthropoda

**37.** If the mass of an object is 60 kgs, what will be its weight on the moon? (N=Newton)
(1) 60N (2) 600N
(3) 100N (4) 10N

**38.** The side mirrors of vehicles are of which type of mirrors?
(1) Convex (2) Concave
(3) Plane (4) Inverted

**39.** In Microsoft Excel, the () function returns the largest value among the values passed as arguments.
(1) HIGHEST (2) MORE
(3) HIGH (4) MAX

**40.** In an acid base reaction which product is produced along with a salt?
(1) Hydrogen gas
(2) Oxygen gas
(3) Carbon dioxide
(4) Water

**41.** What is the process of melting also called?
(1) Fusion
(2) Galvanisation
(3) Crystallisation
(4) Evaporation

**42.** Which one of the following is not a Major Abiotic Factors?
(1) Temperature
(2) Water (3) Light
(4) Air

**43.** ____ scheme launched by the Central Government aims to promote entrepreneurship among people from scheduled caste/scheduled tribe.
(1) Pradhan Mantri Fasal Bima Yojana
(2) Gram Uday Se Bharat Uday Abhiyan
(3) Stand up India scheme
(4) National RU URBAN Mission

**44.** Who discovered Potassium?
(1) Humphry Davy
(2) Alan Turing
(3) Bill Gates
(4) Tim Berners-Lee

**45.** Who is the winner of 2017 Formula One Bahrain Grand Prix?
(1) Sebastian Vettel
(2) Lewis Hamilton
(3) Valtteri Bottas
(4) Kimi Raikkonen

**46.** Where is Humayun's Tomb is located?
(1) Hyderabad
(2) New Delhi
(3) Mumbai
(4) Kolkata

**47.** Which of the following was the winner of the Grammy Awards 2016 "Rap Album of the Year"?
(1) Compton
(2) 2014 Forest Hills Drive
(3) To Pimp a Butterfly
(4) The Pinkprint

**48.** Which of the statements given below are correct?
1. The author of the novel 'Brave New World' is Aldous Huxley.
2. The author of the novel 'An Affair Downstairs' is Sherri Browning.
3. The author of the novel 'Darkness at Noon' is Victor LaValle.

(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** To which country, India gave Rs. 35 crore rupees to children of freedom fighters in under the new 'Muktijodha scholarship' scheme?
(1) Nepal (2) Bhutan
(3) Bangladesh
(4) Sri Lanka

**50.** Which nation is not a part of the South Asian Free Trade Area?
(1) China (2) Sri Lanka
(3) Bhutan (4) India

## QUANTITATIVE APTITUDE

**51.** What will be the quotient when 2143 is divided by 38?
(1) 56 (2) 55
(3) 57 (4) 54

**52.** A and B together can do a job in 15 days and A alone could do the same job in 20 days. How many days would B take to do half the job if he worked alone?
(1) 60 (2) 30
(3) 45 (4) 40

**53.** What is the area (in sq. cm.) of a rectangle if its diagonal is 51 cm. and one of its sides is 24 cm.?
(1) 540 (2) 810
(3) 1080 (4) 360

**54.** A shopkeeper marks up his wares by 60% and offers 10% discount. What will be the selling price (in Rs.) if the cost price is Rs. 7500?
(1) 11800 (2) 12800
(3) 13800 (4) 10800

**55.** What number should be added to each of the numbers 94, 24, 100 and 26, so that the resulting numbers are in continued proportion?
(1) 10 (2) 11
(3) 9 (4) 8

**56.** A batsman makes a score of 81 runs in the 16th match and thus increases his average runs per match by 3. What is his average after the 16th match?
(1) 35 (2) 34
(3) 33 (4) 36

**57.** A vendor buys 12 bananas for Rs. 60 and sells 5 bananas for Rs. 32. What will be his gain (in %)?
(1) 28 (2) 32
(3) 24 (4) 22

**58.** Two labourers A and B are paid a total of Rs. 1120 per day. If A is paid 180 per cent of what is paid to B, how much (in Rs.) is B paid?
(1) 400 (2) 720
(3) 500 (4) 620

**59.** A man travelled a distance of 99 km in 9 hours. He travelled partly on foot at the rate of 9 km./hr. and partly on bicycle at the rate of 18 km./hr. What is distance (in km.) travelled on foot?
(1) 36 (2) 54
(3) 63 (4) 45

**60.** The compound interest earned in two years at 15% per annum is Rs. 20640. What is the sum invested (in Rs.)?
(1) 64000 (2) 60000
(3) 56000 (4) 52000

**61.** If $\frac{5x}{2} - \frac{\left[7\left(6x - \frac{3}{2}\right)\right]}{4} = \frac{5}{8}$, then what is the value of $x$?
(1) $\frac{1}{4}$ (2) $\frac{-1}{4}$
(3) 4 (4) –4

**62.** If $a^3 - b^3 = 91$ and $a - b = 1$, what is the value of $(ab)$ ?
(1) 27 (2) 6
(3) 9 (4) 30

**63.** A fraction is greater than twice its reciprocal by $\frac{7}{15}$. What is the fraction?
(1) $\frac{3}{5}$ (2) $\frac{5}{3}$
(3) $\frac{3}{4}$ (4) $\frac{4}{3}$

**64.** What is the sum of the first 17 terms of an arithmetic progression if the first term is –20 and last term is 28 ?
(1) 68 (2) 156
(3) 142 (4) 242

**65.** What is the reflection of the point (–3, 1) in the line $x = -2$ ?
(1) (–1 , 1) (2) (–3 , –5)
(3) (1 , 1) (4) (–3 , 5)

**66.** The co-ordinates of the centroid of a triangle ABC are (2, 2). What are the co-ordinates of vertex C if co-ordinates of A and B are (7, –1) and (1, 2) respectively?
(1) (–2 , 5) (2) (2, 5)
(3) (–2 , –5) (4) (2, –5)

**67.** If $ax - 4y = -6$ has a slope of $-\frac{3}{2}$, what is the value of $a$ ?

(1) 6 (2) 3
(3) – 6 (4) – 3

**68.** D and E are points on sides AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 1 : 2 and area of ΔABC is 45 sq. cm., what is the area (in sq. cm.) of quadrilateral BDEC?

(1) 20 (2) 40
(3) 15 (4) 30

**69.** What is the value of

$\sqrt{2}$ sec 45° + $\left(\frac{1}{\sqrt{3}}\right)$ tan 30°?

(1) $\left(\frac{1+\sqrt{3}}{2}\right)$

(2) $\left(\frac{1+3\sqrt{2}}{\sqrt{3}}\right)$

(3) $\frac{7}{3}$ (4) $\left(\frac{3+2\sqrt{2}}{3\sqrt{2}}\right)$

**70.** ΔXYZ is right angled at Y. m ∠Z = 30°. What is the length of YZ (in cm.), if ZX = 9 cm.?

(1) $6\sqrt{3}$ (2) $\frac{9\sqrt{3}}{2}$

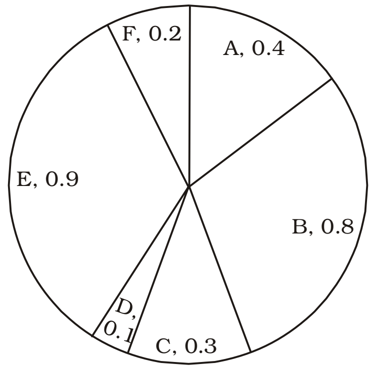
(3) $3\sqrt{3}$ (4) 18

**71.** If $\cos\theta = \frac{15}{17}$, then what is the value of cosecθ ?

(1) $\frac{17}{8}$ (2) $\frac{8}{17}$

(3) $\frac{8}{15}$ (4) $\frac{17}{15}$

**Directions (72–75) :** The pie-chart shows the annual car production (in millions) of six countries (A, B, C, D, E, F). Study the diagram and answer the following questions.




**72.** Which country produced the second least number of cars ?

(1) D (2) F
(3) C (4) A

**73.** Country E produced how many more cars (in%) than that of country B ?

(1) 10 (2) 12.5
(3) 11.11 (4) 8

**74.** If 35% of the cars produced by these six countries are diesel and the rest are petrol, then how many petrol cars were produced (in millions) ?

(1) 1.755 (2) 0.945
(3) 2.7 (4) 1.8

**75.** If on an average the cost price of a car is 30000 USD and environmental tax levied on each car is 2.5% of its cost price, how much environmental tax was collected (in billion USD) from production of cars in these 6 countries ?

(1) 1.03 (2) 2.03
(3) 3.03 (4) 4.03



## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** As Benjamin ran (1)/ next the street, he wondered (2)/ what he should buy. (3)/No Error (4)

**77.** It had a bright blue (1)/ cover, which he was (2)/ careful not do soil. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

**78.** Although the school lunch passed the legal standards, ____ or not it is healthy is debatable.

(1) weather (2) if
(3) whether (4) either

**79.** Seventeen students were needed for a ______ in order to discuss the topics during the Student Council meeting.

(1) decorum (2) quota
(3) quorum (4) quote

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Posterior**

(1) Anterior (2) Antecedent
(3) Dorsal (4) Former

**81. Emphasis**

(1) Ignorance
(2) Lethargy
(3) Triviality
(4) Significance

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Lambency**
(1) Effulgence
(2) Dullness (3) Gusto
(4) Phosphorescence

**83. Turgid**
(1) Bloated (2) Humble
(3) Puffy (4) Tumescent

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. In bad taste**
(1) Not suitable or offensive
(2) To be a bad cook
(3) To have a poor choice of fashion style
(4) To epress honest harsh opinion about someone or something

**85. Once and for all.**
(1) Now and for the last time; finally
(2) To be successful in the first attempt
(3) To do a charitable act for the benefit of everybody
(4) To speak for the majority

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No improvement".

**86. His shoes ( to cover ) with mud.**
(1) was covered
(2) were covered
(3) were covering
(4) No improvement

**87. The tropical storm (be) a hurricane.**
(1) will become
(2) become
(3) to become
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Seeking to harm someone in return for a perceived injury.**
(1) Affable (2) Cordial
(3) Vengeful (4) Benign

**89. The state of being in short supply.**
(1) Plethora (2) Myriad
(3) Scarcity (4) Profusion

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Scriptare (2) Screpture
(3) Scripture (4) Screptare

**91.** (1) Anoyance (2) Annoyanse
(3) Anoyanse
(4) Annoyance

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. It was a somewhat.**
X. carried it off as
Y. trying ordeal, but we
Z. best as we could
(1) YXZ (2) XZY
(3) XYZ (4) ZYX

**93. The considerations which.**
X. are set forth in our
Y. lead us to refer ideas to the brain
Z. physiologies and psychologies
(1) YXZ (2) YZX
(3) XYZ (4) ZYX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**Omkar generously donated money to the orphanage.**
(1) Money was generously donated to the orphanage by Omkar.
(2) Money is generously donated to the orphanage by Omkar.
(3) Donating of the money generously was done by Omkar.
(4) Donating of the money generously is done by Omkar.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**My grandfather said to the visitor, "Who are you? Where do you come from?"**
(1) My grandfather enquired the visitor who are you, where do you come from.
(2) My grandfather enquires the visitor who he was and where he came from.
(3) My grandfather enquired of the visitor who he was and where he came from.
(4) My grandfather enquires the visitor who are you, where do you come from.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

As one of the most misunderstood practices, yoga has often borne the brunt of being **(96)** in extremes : of yogis in pretzel-like contortions at **(97)** end of the spectrum, and young Instagram-led, erstwhile-overweight beach posers **(98)** the other. The truth is that yoga is what you want it to be — the ultimate customisable exercise form. For a runner, it may mean lengthening muscles to gain **(99)**, while for someone who is hyperflexible, it could be a way of **(100)** core strength.

**96.** (1) see (2) seen
(3) saw (4) to see

**97.** (1) first (2) one
(3) once (4) that

**98.** (1) in (2) on
(3) of (4) at

**99.** (1) flexible
(2) flexibleness
(3) flexibilities
(4) flexibility

**100.** (1) enhance
(2) enhancing
(3) enhances
(4) to enhance

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (3) | **3.** (1) | **4.** (3) |
| **5.** (4) | **6.** (2) | **7.** (3) | **8.** (1) |
| **9.** (4) | **10.** (4) | **11.** (1) | **12.** (4) |
| **13.** (2) | **14.** (4) | **15.** (3) | **16.** (4) |
| **17.** (1) | **18.** (1) | **19.** (4) | **20.** (4) |
| **21.** (1) | **22.** (2) | **23.** (3) | **24.** (2) |
| **25.** (2) | **26.** (2) | **27.** (1) | **28.** (4) |
| **29.** (3) | **30.** (1) | **31.** (3) | **32.** (2) |
| **33.** (1) | **34.** (1) | **35.** (1) | **36.** (2) |
| **37.** (3) | **38.** (1) | **39.** (4) | **40.** (4) |
| **41.** (1) | **42.** (4) | **43.** (3) | **44.** (1) |
| **45.** (1) | **46.** (2) | **47.** (3) | **48.** (1) |
| **49.** (3) | **50.** (1) | **51.** (1) | **52.** (2) |
| **53.** (3) | **54.** (4) | **55.** (2) | **56.** (4) |
| **57.** (1) | **58.** (1) | **59.** (3) | **60.** (1) |
| **61.** (1) | **62.** (4) | **63.** (2) | **64.** (1) |
| **65.** (1) | **66.** (1) | **67.** (3) | **68.** (2) |
| **69.** (3) | **70.** (2) | **71.** (1) | **72.** (2) |
| **73.** (2) | **74.** (1) | **75.** (2) | **76.** (2) |
| **77.** (3) | **78.** (3) | **79.** (3) | **80.** (3) |
| **81.** (4) | **82.** (2) | **83.** (2) | **84.** (1) |
| **85.** (1) | **86.** (2) | **87.** (1) | **88.** (3) |
| **89.** (3) | **90.** (3) | **91.** (4) | **92.** (1) |
| **93.** (1) | **94.** (1) | **95.** (3) | **96.** (2) |
| **97.** (2) | **98.** (4) | **99.** (4) | **100.** (2) |

## EXPLANATIONS

**1.** (1) Here 'Working Place-Worker' relation has been shown. Teacher teaches in School. Similarly, Lawyer practices in Court.

**2.** (3) E G I ⟶ B D F
E –3 → B, G –3 → D, I –3 → F

Similarly,

K M O ⟶ H J L
K –3 → H, M –3 → J, O –3 → L

**3.** (1) 5 × (–2) = – 10
Similarly,
(–8) × (–2) = 16

**4.** (3) Except Plate, all others are cutlery items used for eating and serving food. Plate is a flat round dish, from which food is served and eaten.

**5.** (4) A $\xrightarrow{+4}$ E $\xrightarrow{+4}$ I
J $\xrightarrow{+4}$ N $\xrightarrow{+4}$ R
S $\xrightarrow{+4}$ W $\xrightarrow{+4}$ A

But,

F $\xrightarrow{+4}$ H $\xrightarrow{+4}$ J

**6.** (2) Except the number 421, all other numbers are perfect squares.
169 = 13 × 13
529 = 23 × 23
289 = 17 × 17

**7.** (3) First four words form a group and the second group starts with the fifth word-Tense.
The next word starts with the last two letters of the previous word.

Hel<u>lo</u> ⟶ Low<u>er</u> ⟶ Err<u>or</u> ⟶ Organ

Again,

Tense ⟶ Senile

**8.** (1) In the subsequent terms 'O' moves respectively one, two, three, four, five ..... letter(s) but the direction changes alternately, i.e., towards right and left.

X X X O X X X ⟶ X X X X O X X
Towards right

X X X X O X X ⟶ X X O X X X X
Towards left

X X O X X X X ⟶ X X X X X O X
Towards right

X X X X X O X ⟶ X O X X X X X
Towards left

X O X X X X X ⟶ X X X X X X O
Towards right

**9.** (4) Add 4 to the numerator to get the next term.

$\frac{3}{5} \xrightarrow{+4} \frac{7}{5}(=1.4) \xrightarrow{+4} \frac{11}{5} \xrightarrow{+4}$

$\frac{15}{5}(=3) \xrightarrow{+4} \frac{19}{5} \xrightarrow{+4} \frac{23}{5}(=4.6)$

**10.** (4) Number of days from April 14 to Septemeber 20
= 16 + 31 + 30 + 31 + 31 + 20
= 159
= 22 weeks and 5 days
Therefore, Rohan's birthday was on Friday + 5
= Wednesday

**11.** (1) Possible total weights :
(i) 20 + 40 + 80 + 90 = 230 kg
(ii) 20 + 40 + 80 = 140 kg
(iii) 20 + 40 + 90 = 150 kg
(iv) 40 + 80 + 90 = 210 kg
(v) 20 + 80 + 90 = 190 kg
(vi) 20 + 40 = 60 kg
(vii) 20 + 80 = 100 kg
(viii) 20 + 90 = 110 kg
(ix) 40 + 80 = 120 kg
(x) 40 + 90 = 130 kg
(xi) 80 + 90 = 170 kg

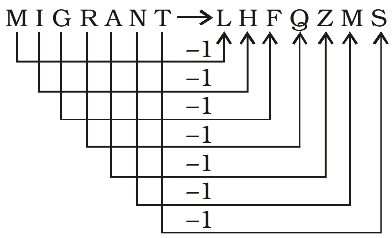
**12.** (4) There is no 'S' letter in the given word. Therefore, the word CARES cannot be formed.

[P R E A C] H E R ⇒ RECAP

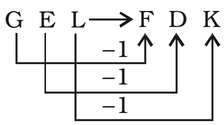
[P R] E [A C H] E R ⇒ PARCH

[P] R [E A C H] E R ⇒ PEACH

**13.** (2)




Therefore,




**14.** (4)

| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

$27 \times 3 \div 30 + 5 - 125 = ?$

$\Rightarrow ? = 27 \div 3 - 30 \times 5 + 125$

$\Rightarrow ? = 9 - 150 + 125$

$\Rightarrow ? = 134 - 150 = -16$

**15.** (3) 11 \$ 25 = 18

$\Rightarrow \frac{11+25}{2} = 18$

$\Rightarrow \frac{36}{2} = 18$

12 \$ 20 = 16

$\Rightarrow \frac{12+20}{2} = 16$

$\Rightarrow \frac{32}{2} = 16$

Therefore,

4 \$ 50 = ?

$\Rightarrow ? = \frac{4+50}{2} = \frac{54}{2} = 27$

**16.** (4) The sum of first and third numbers is equal to the second number in each column.

First Column

21 + 57 = [78]

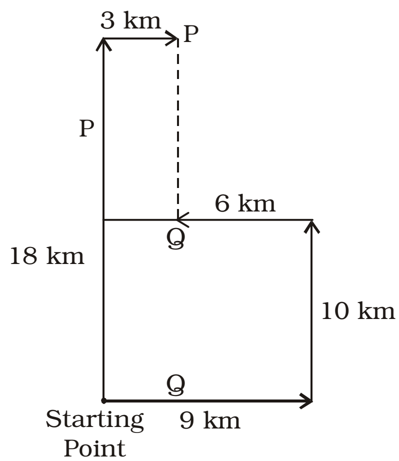
Second Column

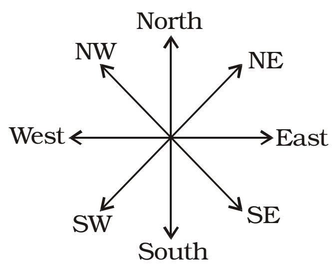
27 + 69 = 96

Third Column

29 + 113 = 142

**17.** (1)




Q is 8 km South of P.

**18.** (1) Only argument I is strong. The means of entertainment attracts tourists. Every region promotes tourism to boost its economy. Argument II does not explain how local traditions are harmed due to tourism.

**19.** (4) After folding the question figure

\# lies opposite ⁎.

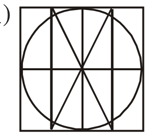
○ lies opposite ◎.

☆ lies opposite ⁘.

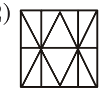
If star is on the top and single circle is on the front surface, then ⁎ would be on the right surface.

**20.** (4) Yoga practitioners who are neither geneticists nor fathers can be represented by such region which is present in the circle but outside triangle and rectangle. Such region is marked F and G.

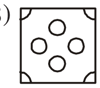
**21.** (1)



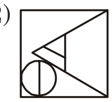
**22.** (2)



**23.** (3)



**24.** (2)



**25.** (2) R ⇒ 58, 66, 67, 85, 98

E ⇒ 10, 22, 33,

A ⇒ 13, 31, 32

L ⇒ 04, 14,

| Option | R | E | A | L |
|---|---|---|---|---|
| (1) | ~~21~~ | 10 | ~~85~~ | ~~96~~ |
| (2) | 85 | 10 | 31 | 04 |
| (3) | ~~14~~ | ~~02~~ | ~~58~~ | ~~88~~ |
| (4) | ~~20~~ | ~~20~~ | ~~77~~ | ~~56~~ |

**26.** (2) Nominal Exchange Rate (NER) is the relative price of a domestic currency in terms of foreign currency. For instance, if the dollar/euro exchange is equal to 1.4, it means that to buy one unit of the European currency it takes 1.4 dollars. NER is essential for the comparison between goods and services produced in different countries, as it expresses prices in a common currency.

**27.** (1) Marginal product of an input is defined as the change in output per unit of change in the input when all other inputs are held constant. Marginal product are additions to

the totalproduct. In other words, MP = Change in Total Product (TP)/Change in Variable Input.

**28.** (4) Trade unions; industrial and labour disputes come under concurrent list in the Seventh Schedule to the Constitution of India. it contains a list of 52 items (though the last item is numbered 47) over which both central and state governments can legislate.

**29.** (3) The writ of prohibition is issued by a higher court (High Court or Supreme Court) when a lower court has considered a case going beyond its jurisdiction. This writ can be issued only against a judicial or quasi-judicial body and not against non-judicial bodies. It is issued when a judicial/quasi-judicial body takes up a case for hearing in excess or in absence of its jurisdiction.

**30.** (1) When Abdul Ghaffar Khan, a devout disciple of Mahatma Gandhi, was arrested on 23 April 1930, angry crowds demonstrated in the streets of Peshawar, facing armoured cars and police firing. He was arrested after giving a speech in Utmanzai urging resistance to British rule. Ghaffar Khan's reputation for uncompromising integrity and commitment to non-violence inspired most of the local townspeople to join the Khudai Khidmatgar in protest.

**31.** (3) The Mughals were the descendants of two great lineages of rulers. They were the descendants of Genghis Khan, the ruler of the Mongol tribes, China and Central Asia, from their mother's side. From their father's side, they were the successors of Timur, the ruler of Iran, Iraq and present-day Turkey. The Mughals were proud of their Timurid ancestry.

**32.** (2) The Brahmaputra marks the eastern most boundary of the Himalayas. Beyond the Dihang gorge, the Himalayas bend sharply to the south and spread along the eastern boundary of India. They are known as the Purvanchal or the Eastern hills and mountains and form a natural boundary between India and Myanmar.

**33.** (1) Zojila pass is situated at an altitude of 3528 meters on the Indian National Highway 1A connecting Srinagar-Kargil-Leh. It is the only feasible motorable road which connects the region to the rest of the world through Srinagar. This road, however, remains closed for better half of every year due to heavy snowfall and avalanches.

**34.** (1) All the three names, indica, tuberosum and leo, represent the specific epithets, while the first words Mangifera, Solanum and Panthera are genera and represents another higher level of taxon or category. Each genus may have one or more than one specific epithets representing different organisms, but having morphological similarities.

**35.** (1) Agar, one of the commercial products obtained from Gelidium and Gracilaria are used to grow microbes and in preparations of ice-creams and jellies. The gelling agent in agar is an unbranched polysaccharide obtained from the cell walls of Gelidium and Gracilaria. For commercial purposes, it is derived primarily from Gelidium amansii. In chemical terms, agar is a polymer made up of subunits of the sugar galactose.

**36.** (2) Taenia (Tapeworm), Fasciola (Liver fluke) are examples of Platyhelminthes, mostly parasites that live in other animals including animals. Some are free-living forms, mainly aquatic-marine or freshwater.Their bodies remain externally covered by cilia or cuticle.

**37.** (3) According to question, the mass of an object is 60 kg.

Acceleration due to gravity 'g' on earth, g = 10 m/s2

So, the weight of object on the Earth = 60 × 10 = 600 Newton

However, since gravity on the Moon has approximately 1/6th of the strength of gravity on Earth, the object that weighs 600 N on Earth would weigh approximately 100N on the Moon.

**38.** (1) Convex mirror is used as side mirror or rear-view mirror in vehicles because they form erect, virtual and diminished images that allows the driver to view large area in small mirror. It provides for a larger field of view than a plane mirror.

**39.** (4) The MAX (maximum) statistical function gives the largest value in a range of values. In contrast, MIN (minimum) statistical function gives the smallest value in a range of values. These functions look like:

MIN function: = MIN(A3:A6)

MAX function:= MAX(A3:A6)

**40.** (4) When an acid and a base are placed together, they react to neutralize the acid and base properties, producing a salt. The H(+) cation of the acid combines with the OH(-) anion of the base to form water. The compound formed by the cation of the base and the

anion of the acid is called a salt. For example, the combination of hydrochloric acid and sodium hydroxide produces common table salt, NaCl:

**41.** (1) Melting, or fusion, is a physical process that results in the phase transition of a substance from a solid to a liquid. This occurs when the internal energy of the solid increases, typically by the application of heat or pressure, which increases the substance's temperature to the melting point. At the melting point, the ordering of ions or molecules in the solid breaks down to a less ordered state, and the solid melts to become a liquid.

**42.** (4) Major abiotic factors include water, sunlight, oxygen, soil and temperature. Abiotic factors are non-living chemical and physical parts of the environment that affect living organisms and the functioning of ecosystems. They affect living organisms in terms of growth, maintenance, and reproduction.

**43.** (3) The 'Stand up India Scheme' is aimed at promoting entrepreneurship among Scheduled Castes/Scheduled Tribes and women by giving loans in the range of Rs 10 lakh to Rs 1 crore for setting up a new enterprise. The scheme was launched by Prime Minister Narendra Modi in April 2016.

**44.** (1) Potassium metal was first isolated in 1807 in England by Sir Humphry Davy, who derived it from caustic potash (KOH, potassium hydroxide) by electrolysis of molten KOH with the newly discovered voltaic pile. Potassium was the first metal that was isolated by electrolysis. A few months after discovering potassium, Davy used the same method to isolate sodium.

**45.** (1) Ferrari's Sebastian Vettel managed to edge out Mercedes AMG's Lewis Hamilton to secure victory in a thrilling 2017 Formula One Bahrain Grand Prix in April 2017. Vettel produced a gutsy drive, having started from third, behind Hamilton and fellow Mercedes man Valtteri Bottas who was on pole.

**46.** (2) Humayun's Tombis the tomb of the Mughal Emperor Humayun located in Nizamuddin East, Delhi. The tomb was commissioned by Humayun's first wife and chief consort, Empress Bega Begum (also known as Haji Begum), in 1569-70, and designed by Mirak Mirza Ghiyas, a Persian architect chosen by her. It was the first garden-tomb on the Indian subcontinent.

**47.** (3) To Pimp a Butterfly won the Grammy Awards 2016 for being the "Rap Album of the Year." It is the third studio album by American rapper Kendrick Lamar. It was released on March 15, 2015, by Top Dawg Entertainment, Aftermath Entertainment and Interscope Records. It was ranked as the best album of 2015 by many publications.

**48.** (1) Darkness at Noon is a novel by Hungarian-born British novelist Arthur Koestler. It was first published in 1940. The novel is set in 1938 during the Stalinist Great Purge and Moscow show trials. It is the tale of Rubashov, an Old Bolshevik who is arrested, imprisoned, and tried for treason against the government that he had helped to create.

**49.** (3) India, in April 2017, announced to give Rs. 35 crore rupees to children of freedom fighters in Bangladesh under the new 'Muktijodha scholarship' scheme in the next five years. Under the scheme, students at higher secondary level will get a one-time grant of Tk 20,000 (Rs 15,370) and students at the undergraduate level will get a grant of Tk 50,000 (Rs 38,430).

**50.** (1) The South Asian Free Trade Area (SAFTA) is an agreement reached on 6 January 2004 at the 12th SAARC summit in Islamabad, Pakistan. It created a free trade area of 1.6 billion people in Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. China is not a member of SAFTA.

**51.** (1)

```
38) 2143 (56
    190
    ----
     243
     228
     ---
      15
```

$\therefore$ Required quotient = 56

**52.** (2) (A + B)'s 1 day's work

$= \frac{1}{15}$

A's 1 day's work $= \frac{1}{20}$

$\therefore$ B's 1 day's work

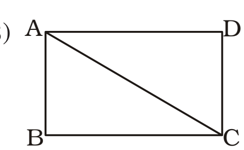
$= \frac{1}{15} - \frac{1}{20}$

$= \frac{4-3}{60} = \frac{1}{60}$

$\therefore$ Time taken by B in doing 1 work = 60 days

$\therefore$ Time taken by B in doing $\frac{1}{2}$ work = 30 days

**53.** (3)



AB = 24 cm.
AC = 51 cm.

$\therefore$ BC = $\sqrt{AC^2 - AB^2}$

= $\sqrt{51^2 - 24^2}$

= $\sqrt{(51+24)(51-24)}$

= $\sqrt{75 \times 27}$ = 45 cm.

$\therefore$ Area of rectangle
= AB × BC
= (24 × 45) sq. cm.
= 1080 sq. cm.

**54.** (4) If the C.P. of wares be Rs. 100,
their marked price = Rs. 160

Their S.P. = Rs. $\left(\frac{160 \times 90}{100}\right)$

= Rs. 144

$\therefore$ Profit per cent = 44%

$\therefore$ Required S.P.

= Rs. $\left(\frac{7500 \times 144}{100}\right)$

= Rs. 10800

**55.** (2) Of the given option (2),

$\frac{94+11}{24+11} = \frac{105}{35} = 3$

and $\frac{100+11}{26+11} = \frac{111}{37} = 3$

**56.** (4) Let the required average runs be $x$.
According to the question,
$16x - 15(x - 3) = 81$
$\Rightarrow 16x - 15x + 45 = 81$
$\Rightarrow x = 81 - 45 = 36$

**57.** (1) Let the number of bananas bought be 60 i.e. LCM of 12 and 5.

$\therefore$ C.P. of 60 bananas

= Rs. $\left(\frac{60}{12} \times 60\right)$

= Rs. 300

Their S. P. = Rs. $\left(\frac{32}{5} \times 60\right)$

= Rs. 384

$\therefore$ Gain per cent

= $\left(\frac{384-300}{300}\right) \times 100$

= $\frac{84}{3}$ = 28%

**58.** (1) According to the question,
A : B = 180 : 100 = 9 : 5
Sum of the terms of ratio
= 9 + 5 = 14

$\therefore$ Amount received by B

= Rs. $\left(\frac{5}{14} \times 1120\right)$

= Rs. 400

**59.** (3) Let the distance covered on foot be $x$ km.

$\therefore$ Distance covered by cycle = $(99 - x)$ km.

Time = $\frac{\text{Distance}}{\text{Speed}}$

$\therefore \frac{x}{9} + \frac{99-x}{18} = 9$

$\Rightarrow \frac{2x+99-x}{18} = 9$

$\Rightarrow x + 99 = 18 \times 9 = 162$

$\Rightarrow x = 162 - 99 = 63$ km.

**60.** (1) C.I. = $P\left[\left(1+\frac{R}{100}\right)^T - 1\right]$

$\Rightarrow 20640 = P\left[\left(1+\frac{15}{100}\right)^2 - 1\right]$

$\Rightarrow 20640 = P\left[\left(1+\frac{3}{20}\right)^2 - 1\right]$

$\Rightarrow 20640 = P\left[\left(\frac{23}{20}\right)^2 - 1\right]$

$\Rightarrow 20640 = P\left[\left(\frac{529}{400}\right) - 1\right]$

$\Rightarrow 20640 = \frac{129P}{400}$

$\Rightarrow P = \frac{20640 \times 400}{129}$

= Rs. 64000

**61.** (1) $\frac{5x}{2} - \left[7\left(6x - \frac{3}{2}\right)\right] \div 4 = \frac{5}{8}$

$\Rightarrow \frac{5x}{2} - \left[42x - \frac{21}{2}\right] \div 4 = \frac{5}{8}$

$\Rightarrow \frac{5x}{2} - \frac{42x}{4} + \frac{21}{8} = \frac{5}{8}$

$\Rightarrow \frac{5x}{2} - \frac{21x}{2} = \frac{5}{8} - \frac{21}{8}$

$\Rightarrow -\frac{16x}{2} = \frac{-16}{8}$

$\Rightarrow -8x = -2$

$\Rightarrow x = \frac{2}{8} = \frac{1}{4}$

**62.** (4) $a^3 - b^3 = 91$
$a - b = 1$
$\therefore a^3 - b^3 = (a - b)^3 + 3ab(a-b)$
$\Rightarrow 91 = 1 + 3ab$
$\Rightarrow 3ab = 91 - 1 = 90$

$\Rightarrow ab = \frac{90}{3} = 30$

**63.** (2) Let the fraction be $x$.
According to the question,

$x - \frac{2}{x} = \frac{7}{15}$

$\Rightarrow \frac{x^2 - 2}{x} = \frac{7}{15}$

$\Rightarrow 15x^2 - 30 = 7x$
$\Rightarrow 15x^2 - 7x - 30 = 0$
$\Rightarrow 15x^2 - 25x + 18x - 30 = 0$
$\Rightarrow 5x(3x - 5) + 6(3x - 5) = 0$
$\Rightarrow (3x - 5)(5x + 6) = 0$

$\Rightarrow x = \frac{5}{3}$ or, $\frac{-6}{5}$

When, $x = \frac{-6}{5}$

$x - \frac{2}{x} = -\frac{6}{5} + \frac{10}{6}$

$= \frac{-36+50}{30} = \frac{14}{30} = \frac{7}{15}$

**64.** (1) First term = $a$ = –20

Last term = $l$ = 28

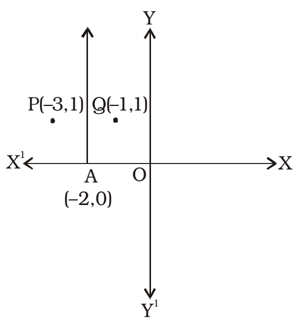
Number of terms = $n$ = 17

$\therefore$ Required sum = $\frac{n}{2}(a+l)$

$= \frac{17}{2}(-20+28)$

$= \frac{17 \times 8}{2} = 68$

**65.** (1)

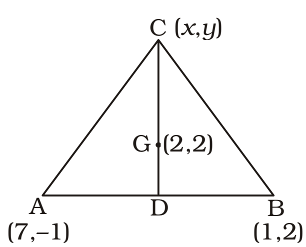


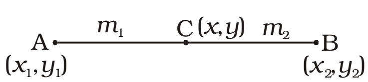

$x = -2$ is the equation of straight line parallel to $y$-axis.

Co-ordinates of P with respect to $x = -2 \Rightarrow (-1, 1)$

$\therefore$ Co-ordinates of image = (–1, 1)

**66.** (1)




$\therefore x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}$

$y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}$

The point of intersection of medians is called centroid.

Centroid G divides the median in the ratio 2 : 1.

i.e. $\frac{CG}{GD} = \frac{2}{1}$

Co-ordinates of mid-point 'D'

$= \left(\frac{7+1}{2}, \frac{-1+2}{2}\right)$

$= \left(4, \frac{1}{2}\right)$

Co-ordinates of vertex 'C' = $(x, y)$

$\therefore 2 = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}$

$= \frac{2 \times 4 + x \times 1}{2+1}$

$\Rightarrow 6 = 8 + x \Rightarrow x = 6 - 8 = -2$

and $2 = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}$

$= \frac{2 \times \frac{1}{2} + y}{2+1}$

$\Rightarrow 6 = 1 + y \Rightarrow y = 6 - 1 = 5$

$\therefore$ Co-ordinates of vertex 'C' = (–2, 5)

**67.** (3) Slope of equation $y = mx + c$ is $m$.

On writing $ax - 4y = -6$ in the form of $y = mx + c$, we have

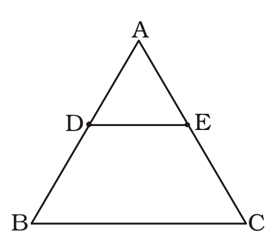
$4y = ax + 6$

$\Rightarrow y = \frac{a}{4}x + \frac{6}{4}$

$\therefore \frac{a}{4} = \frac{-3}{2} \Rightarrow a = -\frac{3}{2} \times 4$

$= -6$

**68.** (2)




DE | | BC

$\therefore \angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA- similarity,

$\Delta ABC \sim \Delta ADE$

$\therefore \frac{AB}{AD} = \frac{BC}{DE}$

Again,

$\therefore \frac{AD}{DB} = \frac{1}{2} \Rightarrow \frac{DB}{AD} = \frac{2}{1}$

$\Rightarrow \frac{DB}{AD} + 1 = 2 + 1 \Rightarrow \frac{AB}{AD} = 3$

$\therefore \frac{\text{Area of } \Delta ADE}{\text{Area of } \Delta ABC} = \frac{AD^2}{AB^2}$

$= \frac{1}{9}$

$\therefore$ Area of $\Delta ADE = \frac{1}{9} \times 45$

= 5 sq. cm.

$\therefore$ Area of quadrilateral BDEC

= (45 – 5) sq. cm.

= 40 sq. cm.

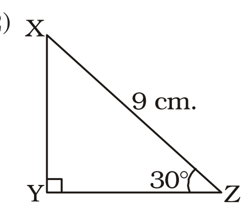
**69.** (3) Expression

$= \sqrt{2} \sec 45° + \frac{1}{\sqrt{3}} \times \tan 30°$

$= \sqrt{2} \times \sqrt{2} + \frac{1}{\sqrt{3}} \times \frac{1}{\sqrt{3}}$

$= 2 + \frac{1}{3} = \frac{7}{3}$

**70.** (2)




$\cos 30° = \frac{YZ}{XZ}$

$\Rightarrow \frac{\sqrt{3}}{2} = \frac{YZ}{9}$

$\Rightarrow YZ = \frac{9\sqrt{3}}{2}$ cm.

**71.** (1) $\cos\theta = \frac{15}{17}$

$\therefore \sin\theta = \sqrt{1-\cos^2\theta}$

$= \sqrt{1-\left(\frac{15}{17}\right)^2}$

$= \sqrt{1-\frac{225}{289}} = \sqrt{\frac{289-225}{289}}$

$= \sqrt{\frac{64}{289}} = \frac{8}{17}$

$\therefore \text{cosec}\theta = \frac{1}{\sin\theta} = \frac{17}{8}$

**72.** (2) Production of cars in country D = 1 lac

Production of cars in country F = 2 lacs

D < F < C < A < B < E

**73.** (2) Required per cent

$= \left(\frac{0.9-0.8}{0.8}\right)\times 100$

$= \frac{1}{8}\times 100 = 12.5\%$

**74.** (1) Total production of cars by all countries

= (0.4 + 0.8 + 0.3 + 0.1 + 0.9 + 0.2) million

= 2.7 millions

∴ Number of petrol engine cars

$= \left(\frac{2.7\times 65}{100}\right)$ millions

= 1.755 millions

**75.** (2) Environment tax collected from each car

$= \left(\frac{30000\times 2.5}{100}\right)$ dollar

= 750 dollar

∴ Required environment tax collected

= (750 × 2.7) million dollars

= 2.025 billion dollars

≈ 2.03 billion dollars

**76.** (2) **Look at these sentences :**

I ran down the stairs as fast as I could.

He was running towards the door.

Hence, towards/through the next street ..... should be used here.

**77.** (3) **Soil (Verb)** = to make dirty especially by solid waste.

Hence, careful not to soil (infinitive) ..... should be used here.

**78.** (3) **Whether** is used to express a doubt or choice between two possibilities.

**79.** (3) **Quorum (Noun)** = the minimum number of members required to start the proceedings of a society or assembly.

**80.** (3) **Posterior (Adjective)** = following; succeeding; rear; coming after in time or order; later; further back in position; dorsal.

**Look at the sentence :**

The posterior lobe of the pituitary gland contains unique glial elements referred to as pituicytes.

**81.** (4) **Emphasis (Noun)** = the particular importance or attention that is given to something.

**Look at the sentence :**

Schools here place great emphasis on written work.

**82.** (2) **Lambency (Noun)** = having a gentle glow; luminous; brilliance.

**Dullness (Noun)** = lack of brightness, vividness or sheen.

**Look at the sentences :**

The lambency of the moon casts shadows on crumbling walls.

Flowery options are available to brighten up the dullness of autumn.

**83.** (2) **Turgid (Adjective)** = too serious about its subject matter; boring; swollen and congested; tediously pompous.

**Humble (Adjective)** = modest; unassertive; ordinary; plain.

**Look at the sentences :**

The majority of them are written in a boring turgid style.

Her bearing was very humble and apologetic.

**84.** (1) **In bad taste** = to be unacceptable in a way that will upset or anger people; inappropriate.

**Look at the sentence :**

He told a joke about death that I thought was in poor taste.

**85.** (1) **Once and for all** = now and for the last time; finally; conclusively.

**Look at the sentence :**

We have to decide, once and for all, whether we want to ask Dad for money.

**86.** (2) Here, passive voice should be used. Subject is passive.

His shoes (plural) were covered with mud.

**87.** (1) Here becomes/will become ..... should be used.

**90.** (3) **Scripture (Noun)** = the sacred writings of christianity contained in the Bible; sacred text.

**91.** (4) **Annoyance (Noun)** = irritation; anger; indignation.

**94.** (1) Subject + was + Adverb + $V_3$

**95.** (3) Said to ⇒ asked; enquired of

who are you ⇒ who he was

where do you come from ? ⇒ where he came from.

**99.** (4) **Flexibility (Noun)** = the ability to be easily modified.

**100.** (2) **Enhancing (Gerund)** = increasing; intensifying.

❑❑❑

S E T 29

# SOLVED PAPER
# SSC CGL TIER-I (CBE) EXAM

Held on : 19.08.2017 (Shift-I)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Product : Multiplication :: Sum : ?
(1) Comparison
(2) Percentage
(3) Numbers
(4) Addition

**2.** Select the related letters from the given alternatives :
FHK : DFI :: OQT : ?
(1) NPS (2) PRT
(3) MOR (4) QSV

**3.** Select the related number from the given alternatives :
10001 : 10101 :: 101 : ?
(1) 11 (2) 201
(3) 100 (4) 121

**4.** Select the odd word from the given alternatives :
(1) Trousers (2) Shirt
(3) Pants (4) Shorts

**5.** Select the odd letters from the given alternatives :
(1) EHK (2) ZBD
(3) LOR (4) SVY

**6.** Select the odd number from the given alternatives :
(1) 10 (2) 20
(3) 15 (4) 30

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
win, note, grain, broker, ?
(1) refund (2) pony
(3) banking (4) mutually

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
KlMnO, qRsTu, WxYzA, cDeFg, ?
(1) iJkLm (2) HiJkL
(3) IjKlM (4) hIjKl

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :
0, 3, 8, ?, 24, 35
(1) 15 (2) 16
(3) 18 (4) 9

**10.** Faiyaz's birthday is on Wednesday 12th April. On what day of the week will be Shray's birthday in the same year if Shray was born on 2nd October?
(1) Monday (2) Saturday
(3) Wednesday
(4) Sunday

**11.** The weights of 4 boxes are 20, 90, 40 and 60 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 210 (2) 170
(3) 190 (4) 200

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**SMOTHERS**
(1) THOSE (2) METRO
(3) STORE (4) TEARS

**13.** If FRISKED is coded as HTKUMGF, then how will SUN be coded as?
(1) UWP (2) RGZ
(3) KMJ (4) ZBF

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
80 + 2 ÷ 25 + 5 – 10 = ?
(1) 35 (2) 98
(3) 36 (4) 45

**15.** If 45 % 11 = 7, 59 % 34 = 7 then what is the value of 55 % 4 = ?
(1) 6 (2) 40
(3) 45 (4) 50

**16.** Select the missing number from the given responses :

| 102 | 89 | ? |
|---|---|---|
| 87 | 45 | 25 |
| 15 | 44 | 52 |

(1) 13 (2) 25
(3) 77 (4) 15

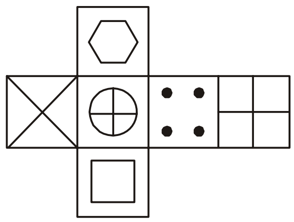
**17.** Two cars C and D start from the same point. C travels 9 km South, then turns to its left and travels another 11 km. D travels 3 km East, then turns South and travels 5 km, then turns to its left and travels another 8 km. Where is D with respect to C now?
(1) 4 km South
(2) 14 km North
(3) 4 km North
(4) 14 km South

**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.
**Statement :** Should street lights be switched off after midnight?
**Argument I :** No, statistics show that crime and accidents increase if street lights are switched off.
**Argument II :** Yes, few vehicles ply after midnight, expensive electricity will be wasted.
(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

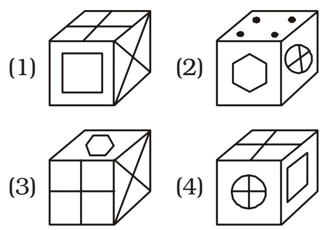
**19.** Which of the followig cube in the answer figure cannot be

made based on the unfolded cube in the question figure?

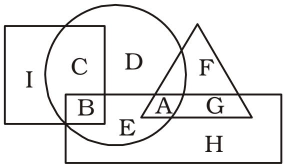
**Question Figure :**



**Answer Figures :**



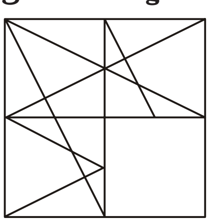

**20.** In the following figure, square represents Painters, triangle represents Women, circle represents Accountants and rectangle represents Americans. Which set of letters represents Americans who are not Accountants?



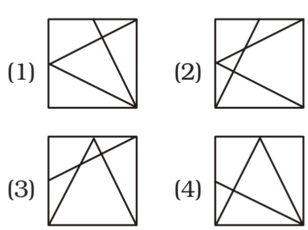

(1) D, C, H (2) G, H
(3) G, B, E (4) D, A

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

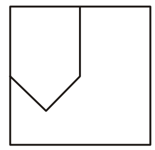


**Answer Figures :**

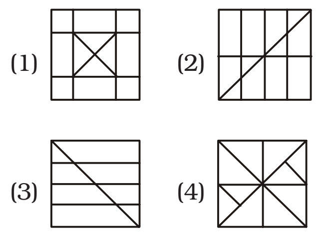



**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

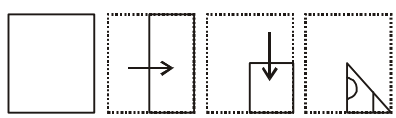


**Answer Figures :**

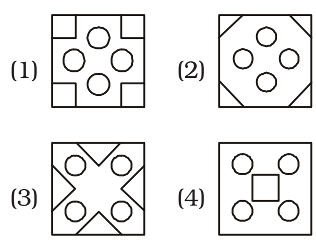



**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

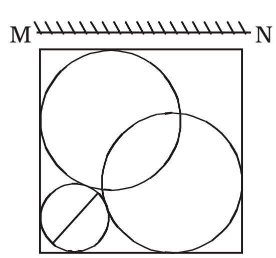


**Answer Figures :**

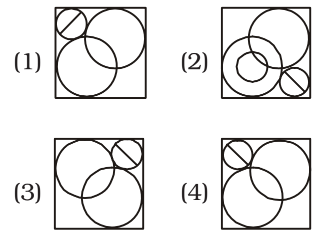



**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 42, 34 etc and 'Z' can be represeted by 76, 59 etc. Similarly, you have to identify the set for the word **'SELF'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | H | H | D | I | C |
| 1 | D | A | H | I | G |
| 2 | B | K | K | E | L |
| 3 | G | H | A | B | K |
| 4 | A | F | K | C | D |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | O | Y | T | N | Z |
| 6 | V | Q | R | S | Q |
| 7 | V | Z | U | Q | S |
| 8 | O | P | T | O | N |
| 9 | S | N | Y | V | O |

(1) 95, 23, 24, 41
(2) 44, 43, 87, 95
(3) 04, 31,85, 58
(4) 24, 04, 66, 77

## GENERAL AWARENESS

**26.** The collection of all possible combinations of the goods and services that can be produced from a given amount of resources and a given stock of technological knowledge is called the _________ of the economy.
(1) Resource Probability Set
(2) Production Probability Set
(3) Resource Possibility Set
(4) Production Possibility Set

**27.** If at a price, market supply is greater than market demand, we say that there is _______ in the market at that price.
(1) Equilibrium
(2) Excess Demand
(3) Excess Supply
(4) Marginal Revenue

**28.** In which year was All India Anna Dravida Munnetra Kazhagam (AIADMK) founded?
(1) 1949 (2) 1999
(3) 1972 (4) 1997

**29.** Which Fundamental Right in the Indian Constitution includes equal access to shops, bathing, ghats, hotels etc?
(1) Right to Liberty and Personal Freedom
(2) Right to Freedom of Religion
(3) Right to Equality
(4) Cultural and Educational Rights

**30.** For how many days did Mahatma Gandhi's volunteers of the Salt satyagrah walked?
(1) 24 (2) 36
(3) 12 (4) 6

**31.** The Tomara Rajputs, were defeated in the middle of the twelfth century by the Chauhans of ________.
(1) Ayodhya (2) Ajmer
(3) Dwarka (4) Gwalior

**32.** India is the ______ largest country in the world.
(1) 3rd (2) 5th
(3) 7th (4) 9th

**33.** The place on the earth's surface above the focus is called the _________.
(1) focus
(2) incentre
(3) epicentre
(4) circumcentre

**34.** The male sex accessory ducts include vasa efferentia, epididymis, vas deferens and______.
(1) Cervix
(2) Rete Testis
(3) Glands
(4) Seminiferous Tubules

**35.** The meristem which occurs between mature tissues is known as ________meristem.
(1) Intercalary(2) Primary
(3) Lateral (4) Apical

**36.** Which of the following Phylum are also called flatworms?
(1) Mollusca
(2) Chordata
(3) Ctenophora
(4) Platyhelminthes

**37.** In the formula average velocity = $\frac{(u+v)}{2}$, $u$ is the
(1) Final velocity
(2) Initial displacement
(3) Initial velocity
(4) Final displacement

**38.** Vocal chords in women are _________ than vocal chords in men.
(1) 5mm shorter
(2) 15mm shorter
(3) 5mm longer
(4) 15mm longer

**39.** The web uses the _________ to request and serve web pages and programs.
(1) Hyper Text Marketing Language
(2) Hyper Text Markup Language
(3) Hotmail Text Markup Language
(4) Home Text Markup Language

**40.** What is the name of the acid in grapes?
(1) Lactic acid
(2) Formic acid
(3) Acetic acid
(4) Tartaric acid

**41.** Which fibre is also called as artificial silk?
(1) Nylon (2) Rayon
(3) Polyester (4) Acrylic

**42.** During the past century, the temperature of Earth has increased by ________.
(1) 0.6°C (2) 1.6°C
(3) 2.6°C (4) 3.6°C

**43.** ______ scheme was launched by the Central Government to give financial services to weaker section of society.
(1) Sukanya Samridhi Yojana
(2) Bal Swachta Mission
(3) Pradhan Mantri Jan Dhan Yojana
(4) Beti Bachao Beti Padhao Yojana

**44.** Who discovered Uranus?
(1) Sir Isaac Newton
(2) William Henry Fox Talbot
(3) William Herschel
(4) Nicolaus Copernicus

**45.** Who was the host nation of 2015 Men's Rugby World Cup?
(1) New Zealand
(2) South Africa
(3) Australia
(4) England

**46.** Who started construction of Nalanda (Mahavihara) ?
(1) Dharampala
(2) Ashoka
(3) Kumaragupta
(4) Harihara

**47.** Who is not amongst the winners of Nobel Prize 2016 for Chemistry?
(1) Jean-Pierre Sauvage
(2) J. Michael Kosterlitz
(3) Sir J. Fraser Stoddart
(4) Bernard L. Feringa

**48.** Which of the statements given below are correct?
1. The author of the novel 'Missile Gap' is Charles Stross.
2. The author of the novel 'Bird Box' is Victor LaValle.
3. The author of the novel 'The City and the City' is China Mieville.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** Which country was India's largest overseas investment destination in the year 2015-16 ?
(1) Mauritius
(2) Switzerland
(3) Saudi Arabia
(4) Australia

**50.** China does not share its border with which Indian state?
(1) Bihar
(2) Arunachal Pradesh
(3) Himachal Pradesh
(4) Sikkim

## QUANTITATIVE APTITUDE

**51.** What is the LCM of 64 and 56?
(1) 448 (2) 488
(3) 484 (4) 408

**52.** A and B together do a job in 6.75 days and A could do the job in 9 days if he worked alone. How many days would B take to do the job if he worked alone?
(1) 27 (2) 18
(3) 24 (4) 21

**53.** What is the diameter (in cm.) of a sphere of surface area 154 sq cm.?
(1) 3.5 (2) 14
(3) 10.5 (4) 7

**54.** A Rs. 100 shirt is offered at 10% discount and a Rs. 300 pair of trousers at 20% discount. If Pritam bought 1 shirt and 3 pairs of trousers, what is the effective discount (in %) he got?
(1) 19 (2) 18
(3) 17 (4) 16

**55.** A's wealth is $\frac{5}{7}$ times of B's and C's is $\frac{10}{7}$ times of B's. What is the ratio of C's wealth to A's?
(1) (49 : 100) (2) (1 : 2)
(3) (2 : 1) (4) (100 : 49)

**56.** The average of four consecutive odd numbers is 64. What is the value of largest number?
(1) 65 (2) 69
(3) 71 (4) 67

**57.** If a wholesaler, sells a box of chocolates at Rs. 960 he gains 20%. Now if he decides to sell it at Rs. 1120, what is his profit per cent ?
(1) 30 (2) 40
(3) 50 (4) 60

**58.** A man wills 25% of his wealth to charity and rest to his family. What per cent of the wealth willed to charity does the family get?
(1) 200 (2) 33.3
(3) 300 (4) 25

**59.** If a person had walked at 15 km/hr instead of 9 km/hr, he would have walked 3 km more in the same time. What is the actual distance (in km.) travelled by him?
(1) 5.5 (2) 6.5
(3) 4.5 (4) 7.5

**60.** Ganesh invested an amount of Rs. $x$ in a fixed deposit scheme offering 5% per annum for 1st year and 15% per annum for 2nd year and received an amount of Rs. 9660 after two years. What is the value of $x$ (in Rs.)?
(1) 9000 (2) 8000
(3) 8500 (4) 8200

**61.** If $\frac{\left[4\left(\frac{2x}{5}-\frac{3}{2}\right)\right]}{3+\frac{7}{5}}=\frac{37}{5}$, then what is the value of $x$?
(1) –15 (2) $\frac{7}{5}$
(3) 15 (4) $-\frac{7}{5}$

**62.** If $a - b = 4$ and $ab = -3$, then what is the value of $(a^3 - b^3)$ ?
(1) 21 (2) 28
(3) 23 (4) –20

**63.** The sum of twice a fraction and 3 times its reciprocal is $\frac{29}{3}$. What is the fraction?
(1) $\frac{2}{9}$ (2) $\frac{5}{4}$
(3) $\frac{4}{5}$ (4) $\frac{9}{2}$

**64.** The 7th term and 12th term of an arithmetic progression are –15 and 5 respectively. What is the 16th term?
(1) 25 (2) 29
(3) 21 (4) 33

**65.** What is the reflection of the point (4, –3) in the line $y = -2$?
(1) (4, 1) (2) (–4, 1)
(3) (–4, –1) (4) (4, –1)

**66.** The distance between the points (2, 7) and ($k$, –5) is 13. What is the value of $k$ ?
(1) –7 (2) 7
(3) 6 (4) –6

**67.** What is the equation of the line perpendicular to the line $5x + 3y = 6$ and having $y$-intercepts as – 3?
(1) $3x - 5y = 15$
(2) $3x + 5y = 15$
(3) $3x - 5y = -15$
(4) $3x + 5y = -15$

**68.** D and E are points on side AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 2 : 5 and area of ΔADE is 8 sq. cm. what is the area (in sq. cm.) of quadrilateral BDEC?
(1) 98 (2) 94
(3) 90 (4) 86

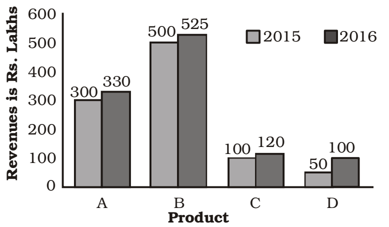
**69.** What is the value of sin 30° – $\sqrt{2}$ cos 30°?
(1) $\frac{(1-\sqrt{6})}{\sqrt{2}}$ (2) $\frac{(1-\sqrt{6})}{2}$
(3) $\frac{(3-\sqrt{6})}{2}$ (4) $\frac{(3-\sqrt{6})}{\sqrt{2}}$

**70.** ΔXYZ is right angled at Y. If m ∠Z = 60°. What is the length (in cm.) of YZ, if ZX = $9\sqrt{3}$ cm?
(1) $3\sqrt{3}$ (2) $\frac{3\sqrt{3}}{2}$
(3) $\frac{9\sqrt{3}}{2}$ (4) $\sqrt{3}$

**71.** If sec θ = $\frac{13}{12}$, then what is the value of sin θ?
(1) $\frac{5}{13}$ (2) $\frac{12}{5}$
(3) $\frac{12}{13}$ (4) $\frac{5}{12}$

**Directions (72–75) :** The bar graph shows revenues in rupees lakhs from selling four different prod-

ucts (A, B, C, D) by a certain company. Study the diagram and answer the following questions.




**72.** Revenues from which product were the least in both the years 2015 and 2016?
(1) D (2) A
(3) B (4) C

**73.** By what value (in %) the revenue from sale of product B in 2016 was greater than that of 2015?
(1) 0.5 (2) 5
(3) 25 (4) 2

**74.** By what amount (in Rs crore) the total revenue by selling all the four products in 2016 is greater than that of 2015 ?
(1) 1 (2) 0.75
(3) 1.5 (4) 1.25

**75.** If the cost of producing and selling the four products was Rs. 10 crores each in 2015 and 2016 then what is the cumulative profit (in Rs. Lakhs) earned in the years 2015 and 2016?
(1) 75 (2) 25
(3) 50 (4) 100

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The boy who (1)/ sat close him (2)/ was his son. (3)/ No Error (4)

**77.** When I returned I felt (1)/ a big cat brush side me (2)/ as I opened the door. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Ever since Anita lost her job, she has done _________ but wallow in self-pity.
(1) none (2) nothing
(3) no (4) never

**79.** As I think back to my childhood, I ________ recall the fun summers on my grandfather's farm.
(1) wistfully (2) fiscally
(3) hopefully (4) Awfully

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Pillage**
(1) Bequeath (2) Consign
(3) Entrust (4) Desecrate

**81. Cluster**
(1) Individual
(2) Assemblage
(3) Specific (4) Solitary

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Rampart**
(1) Barricade
(2) Fort
(3) Embankment
(4) Ditch

**83. Epidemic**
(1) Contagious
(2) Endemic (3) Limited
(4) Infectious

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To have at one's fingertips**
(1) To be very fast on the keyboard
(2) To be adroit with a percussion musical instrument
(3) Recall of factual information at one's command
(4) To carefully note down minute details

**85. To not have a clue**
(1) To be extremely poor
(2) To fail an examination
(3) To lose confidence at the last moment
(4) To not know about something

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "no improvement".

**86.** Since when **(have to start)** a business been so easy?
(1) has started
(2) have starting
(3) has starting
(4) No improvement

**87.** Those films **(being)** made now.
(1) was being
(2) is being
(3) are being
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Protection of or authority over someone**
(1) Autonomous
(2) Tutelage
(3) Nonaligned
(4) Unaided

**89. Optimistic in an apparently difficult situation**
(1) Sanguine
(2) Pallid
(3) Pessimistic
(4) Sallow

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Actuasion (2) Actation
(3) Actasion (4) Actuation

**91.** (1) Motheatan
(2) Mothaten (3) Mothatan
(4) Motheaten

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. We entered, and**
X. had been assigned
Y. to each of us
Z. found that a hut
(1) YZX (2) YXZ
(3) ZXY (4) XZY

**93. The resulting brain change is**
X. concomitant of
Y. the sensation
Z. regarded as the true
(1) YZX (2) YXZ
(3) XZY (4) ZXY

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**Who taught you to ride?**
(1) By whom is you taught to ride?
(2) By whom were you taught to ride?
(3) Riding by you was taught by who?
(4) Riding by you was taught by whom ?

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**Sheetal said to me, "How have you solved this problem?"**
(1) Sheeta asked me how I had solved that problem.
(2) Sheetal asked me how I have solved that problem .
(3) Sheetal asked me how I had solved this problem.
(4) Sheetal asked me how I have solved this problem .

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

The woodpeckers of the West (with one exception) are different **(96)** those of the East, and so are the flycatchers, the grosbeaks, the orioles, the tanagers, the hummingbirds, **(97)** many of the sparrows. **(98)** of the purple and bronzed grackles (the latter are **(99)** seen on the plains of Colorado, but are not common), the Rockies boast of Brewer's blackbird, **(100)** habits are not as prosaic as his name would indicate.

**96.** (1) for (2) from
(3) of (4) to

**97.** (1) and (2) because
(3) but (4) if

**98.** (1) Beside (2) Next
(3) Instead (4) Near

**99.** (1) sometime (2) sometimes
(3) at time (4) any time

**100.** (1) whose (2) who
(3) whom (4) whoever

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (3) | **3.** (2) | **4.** (2) |
| **5.** (2) | **6.** (3) | **7.** (3) | **8.** (3) |
| **9.** (1) | **10.** (1) | **11.** (4) | **12.** (4) |
| **13.** (1) | **14.** (4) | **15.** (1) | **16.** (3) |
| **17.** (3) | **18.** (1) | **19.** (4) | **20.** (2) |
| **21.** (1) | **22.** (4) | **23.** (1) | **24.** (4) |
| **25.** (1) | **26.** (4) | **27.** (2) | **28.** (3) |
| **29.** (3) | **30.** (1) | **31.** (2) | **32.** (3) |
| **33.** (3) | **34.** (2) | **35.** (1) | **36.** (4) |
| **37.** (3) | **38.** (3) | **39.** (2) | **40.** (4) |
| **41.** (2) | **42.** (1) | **43.** (3) | **44.** (3) |
| **45.** (4) | **46.** (3) | **47.** (2) | **48.** (3) |
| **49.** (1) | **50.** (1) | **51.** (1) | **52.** (1) |
| **53.** (4) | **54.** (1) | **55.** (3) | **56.** (4) |
| **57.** (2) | **58.** (3) | **59.** (3) | **60.** (2) |
| **61.** (3) | **62.** (2) | **63.** (4) | **64.** (3) |
| **65.** (4) | **66.** (2) | **67.** (1) | **68.** (3) |
| **69.** (2) | **70.** (3) | **71.** (1) | **72.** (1) |
| **73.** (2) | **74.** (4) | **75.** (2) | **76.** (2) |
| **77.** (2) | **78.** (2) | **79.** (1) | **80.** (4) |
| **81.** (2) | **82.** (4) | **83.** (3) | **84.** (3) |
| **85.** (4) | **86.** (3) | **87.** (3) | **88.** (2) |
| **89.** (1) | **90.** (4) | **91.** (4) | **92.** (3) |
| **93.** (4) | **94.** (2) | **95.** (1) | **96.** (2) |
| **97.** (1) | **98.** (3) | **99.** (2) | **100.** (1) |

## EXPLANATIONS

**1.** (4) Product is a quantity obtained by multiplying one number by another. Similarly, sum is a quantity obtained by adding one number to another.

**2.** (3)

F H K : D F I : : O Q T : M O R
(F –2 → D, H –2 → F, K –2 → I; O –2 → M, Q –2 → O, T –2 → R)

**3.** (2)

10001 : 10101 : : 101 : 201
(+100) (+100)

**4.** (2) Except Shirt, all others are meant for lower part of the body. Shirt is garment of upper part of the body.

**5.** (2) E $\xrightarrow{+3}$ H $\xrightarrow{+3}$ K
L $\xrightarrow{+3}$ O $\xrightarrow{+3}$ R
S $\xrightarrow{+3}$ V $\xrightarrow{+3}$ Y
But,
Z $\xrightarrow{+2}$ B $\xrightarrow{+2}$ D

**6.** (3) Except '15' all are multiples of 10.

**7.** (3) The number of letters is increasing by one in the next term.
Win ⇒ 3 letters
Note ⇒ 4 lettrs
Grain ⇒ 5 letters
Broker ⇒ 6 letters
Banking ⇒ 7 letters

**8.** (3)

KlMnO, qRsTu, WxYzA, cDefg, IjklM
(+2) (+2) (+2) (+2)

Each small letter comes after capital letter.

**9.** (1) 0 $\xrightarrow{+3}$ 3 $\xrightarrow{+5}$ 8 $\xrightarrow{+7}$ 15 $\xrightarrow{+9}$ 24 $\xrightarrow{+11}$ 35

**10.** (1) 12th April ⇒ Wednesday
Number of days from 12th April to 2nd October
= 18 + 31 + 30 + 31 + 31 + 30 + 2
= 173 days
= 24 weeks 5 days
Number of odd days = 5
Wednesday + 5 ⇒ Monday

**11.** (4) Possible weights of combinations of boxes :
(i) 20 + 90 + 40 + 60 = 210
(ii) 20 + 90 + 40 = 150
(iii) 20 + 90 + 60 = 170
(iv) 20 + 40 + 60 = 120
(v) 90 + 40 + 60 = 190
(vi) 20 + 90 = 110
(vii) 20 + 40 = 60
(viii) 20 + 60 = 80
(ix) 90 + 40 = 130
(x) 90 + 60 = 150
(xi) 40 + 60 = 100

**12.** (4) There is no 'A' letter in the given word. Therefore, the word TEARS cannot be formed.

[S] M [O T H E] R S

⇒ THOSE

S | M O T | H | E R | S

⇒ METRO

| S | M | O T | H | E R | S

⇒ STORE

**13.** (1)

F R I S K E D
(+2 each)
H T K U M G F

Therefore,

S U N
(+2 each)
U W P

**14.** (4)

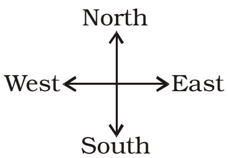
| + ⇒ × | − ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ − |

$80 + 2 \div 25 + 5 - 10 = ?$
$\Rightarrow ? = 80 \times 2 - 25 \times 5 + 10$
$\Rightarrow ? = 160 - 125 + 10$
$\Rightarrow ? = 170 - 125 = 45$

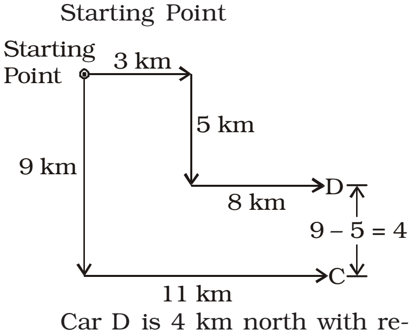
**15.** (1) 45%11 ⇒ (4 + 5) – (1 + 1)
= 9 – 2 = 7
59%34 ⇒ (5 + 9) – (3 + 4)
= 14 – 7 = 7
Therefore,
55%4 ⇒ (5 + 5) – 4
= 10 – 4 = 6

**16.** (3) In each column, Second Number + Third Number = First Number.
First Column
87 + 15 = 102
Second Column
45 + 44 = 89
Third Column
25 + 52 = 77

**17.** (3)



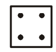

Starting Point

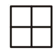



Car D is 4 km north with respect to Car C.

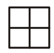
**18.** (1) Only argument I holds strong. It is true that few vehicles ply after midnight. It is not proper to deny safety and security to even a single person. Therefore, argument II does not strong.

**19.** (4) After folding the figure :

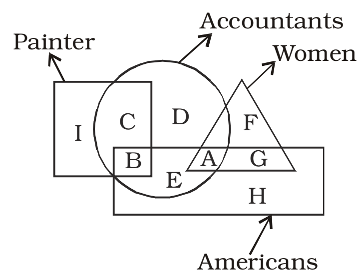
lies opposite .

lies opposite .

lies opposite .

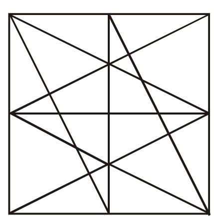
cannot be on the face adjacent to . Therefore, option (4) is not possible.

**20.** (2)

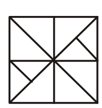



Americans who are not Accountants can be represented by such letters which are present in the rectangle but outside the circle. Such letters are G and H.

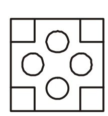
**21.** (1)



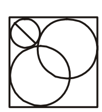
**22.** (4)



**23.** (1)



**24.** (4)



**25.** (1) S = 68, 79, 95
E = 23
L = 24
F = 41

| Options | S | E | L | F |
|---|---|---|---|---|
| (1) | 95 | 23 | 24 | 41 |
| (2) | 44 | 43 | 87 | 95 |
| (2) | 04 | 31 | 85 | 56 |
| (2) | 24 | 04 | 66 | 77 |

**26.** (4) The production possibility set is a curve depicting all maximum output possibilities for two goods, given a set of inputs consisting of resources and other factors. It assumes that all inputs are used efficiently.

**27.** (2) In economics, an excess supply or economic surplus is a situation in which the quantity of a good or service supplied is more than the quantity demanded, and the price is above the equilibrium level determined by supply and demand excess supply simply equals the amount of supply minus the amount of demand.

**28.** (3) All India Anna Dravida Munnetra Kazhagam (AIADMK) was founded by M. G. Ramachandran on 17 October, 1972 as a breakaway faction of the Dravida Munnetra Kazhagam (DMK). From 1989 to 2016, AIADMK was led by Jayalalithaa, who served as the Chief Minister of Tamil Nadu on several occasions.

**29.** (3) The Right to Equality has been guaranteed by the Indian Constitution in Articles 14–18. Article 15 (2) states that no citizens shall on any of these grounds be deprived of access to shops, public restaurants, hotels, and places of public entertainment or the use of wells, tanks, bathing ghats, roads and places of public resort maintained wholly or partly out of state funds or dedicated to the use of general public.

**30.** (1) The Salt Satyagraha was a mass civil disobedience movement initiated by Mahatma Gandhi against the salt tax imposed by the British government in India. He led a large group of people from Sabarmati Ashram on 12th March 1930 till Dandi, a coastal village in

Gujarat, to break the salt law by producing salt from seawater. On the morning of 6th April 1930, Gandhiji broke the salt law by making salt. Thousands of people followed suit.

**31.** (2) The Tomars founded the city of Delhi in 736 A.D. They were the feudatory chiefs of the Pratiharas but later on they established their own kingdom at Delhi. In 1043, Mahipala Tomar captured Thaneswar, Hansi and Nagarkot. In the middle of the 12th century they came under the suzerainty of the Chauhans of Ajmer who captured Delhi from them.

**32.** (3) Top 10 countries area wise : Russia > Canada > USA > China > Brazil > Australia > India > Argentina > Kazaksthan > Algeria.

**33.** (3) Earthquakes occur when tension is released from inside the crust. The point inside the crust where the pressure is released is called the focus. The point on the Earth's surface above the focus is called the epicentre. The most severe damage caused by an earthquake will happen close to the epicentre.

**34.** (2) The male accessory ducts are vasa efferentia, epididymis, vas deferens, and rete testis. They play an important role in the transport and temporary storage of sperms. On the contrary, male accessory glands are seminal vesicles, prostate glands and bulbourethral glands.

**35.** (1) Intercalary meristem lies between the region of permanent tissues and is considered as a part of primary meristem which has become detached due to formation of intermediate permanent tissues. It is found either at the base of leaf e.g. Pinus or at the base of internodes e.g. grasses.

**36.** (4) There are around 29,000 described species in the phylum Platyhelminthes. Platyhelminths, or flatworms, include both free-living and parasitic species. Members of this phylum are soft, thin-bodied, leaf or ribbonlike worms, including the familiar planaria of ponds and streams, as well as the flukes and tapeworms parasitic in human and other animal bodies.

**37.** (3) Velocity is the rate that the position of an object changes relative to time. Forces acting on an object cause it to accelerate. This acceleration changes the velocity. Initial Velocity is the velocity at which motion begins. It is denoted by u.

**38.** (3) Adult men and women have different vocal folds sizes; reflecting the male-female differences in larynx size. Adult male voices are usually lower-pitched and have larger folds. The male vocal folds, are between 17 mm and 25 mm in length. The female vocal folds are between 12.5 mm and 17.5 mm in length.

**39.** (2) Hypertext Markup Language (HTML) is the standard markup language for creating web pages and web applications. Web browsers receive HTML documents from a web server or from local storage and render them into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

**40.** (4) Tartaric Acid is a white crystalline dicarboxylic acid found in many plants, particularly tamarinds and grapes. Its salt, potassium bitartrate, commonly known as cream of tartar, develops naturally in the process of winemaking.

**41.** (2) Rayon or artificial silk is a manufactured regenerated cellulose fiber. It is made from purified cellulose, primarily from wood pulp, which is chemically converted into a soluble compound. It is then dissolved and forced through a spinneret to produce filaments which are chemically solidified, resulting in synthetic fibers of nearly pure cellulose.

**42.** (1) Global warming is a significant increase in the Earth's climatic temperature over a relatively short period of time as a result of the activities of humans. The he global average surface temperature rose 0.6 to 0.9 degrees Celsius (1.1 to 1.6° F) between 1906 and 2005, and the rate of temperature increase has nearly doubled in the last 50 years. Temperatures are certain to go up further.

**43.** (3) The government's financial inclusion scheme 'Pradhan Mantri Jan-Dhan Yojana' offers easy access to banking services launched on August 28, 2014. It seeks to ensure access to financial services - banking/ savings and deposit accounts, remittance, credit, insurance and pension – in an affordable manner.

**44.** (3) Uranus was officially discovered by Sir William Herschel in 1781. It is often referred to as an "ice giant" planet. The moons of Uranus include Oberon, Titania and Miranda.

**45.** (4) The 2015 Rugby World Cup was the eighth Rugby World Cup hosted by England from 18 September to 31 October. New Zealand won the cup defeating Australia.

**46.** (3) Nalanda was one of the most publicly acknowledged Mahaviharas of ancient India located in ancient Magadha kingdom (modern Bihar). It remained a learning centre from 7th century BCE through c. 1200 CE. The accounted history of Nalanda dates back to the Gupta Empire with a seal confirming the founder of the place as the 5th-century CE Gupta emperor Kumaragupta I. Post the Gupta period Nalanda continued to develop under the auspices of several kings, particularly during the 7th century under the reign of emperor Harsha of Kannauj.

**47.** (2) The Nobel Prize in Chemistry 2016 is awarded to Jean-Pierre Sauvage, Sir J. Fraser Stoddart and Bernard L. Feringa for their design and production of molecular machines. The Nobel Prize in Chemistry 2017 is awarded to Jacques Dubochet, Joachim Frank and Richard Henderson for the development of cryo-electron microscopy, which both simplifies and improves the imaging of biomolecules.

**48.** (3) Missile Gap is a 2006 science fiction novel by Charles Stross.

- Bird Box is a 2014 post-apocalyptic novel of Josh Malerman.
- The City & the City is a novel by British author China Miéville.

**49.** (1) Mauritius was India's largest overseas investment destination in 2015–16. Mauritius, Singapore, British Virgin Islands, Jersey and Switzerland figure in the list of top 10 destinations for India's overseas investment. The remaining five countries in that list are the United States, the Netherlands, United Arab Emirates, the United Kingdom and Russia.

**50.** (1) The Line of Actual Control (LAC) is the effective border between India and the People's Republic of China. It traverses 4,057 km along the Indian states of Jammu and Kashmir, Uttarakhand, Himachal Pradesh, Sikkim and Arunachal Pradesh.

**51.** (1) $64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$

$56 = 2 \times 2 \times 2 \times 7$

L.C.M. of 64 and 56

$= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7$

$= 448$

**52.** (1) B, alone will do the work

$= \frac{9 \times 6.75}{9 - 6.75} = \frac{9 \times 6.75}{2.25}$

$= 27$ days

**53.** (4) Surface area of sphere = 154

$\Rightarrow 4\pi R^2 = 154$

$\Rightarrow 4 \times \frac{22}{7} \times R^2 = 154$

$\Rightarrow R^2 = \frac{154 \times 7}{4 \times 22} \Rightarrow R^2 = \frac{7 \times 7}{4}$

$\Rightarrow R = \sqrt{\frac{7 \times 7}{4}} = \frac{7}{2} = 3.5$ cm.

Diameter of sphere = 2R

$= 2 \times 3.5 = 7$ cm

**54.** (1) Price of one shirt = Rs. 100

Discount = 10% of 100

$= \frac{100 \times 10}{100}$ = Rs. 10

Price of 3 pairs of trousers

= Rs. (3 × 300) = Rs. 900

Discount = 20% of 900

= Rs. $\left(\frac{900 \times 20}{100}\right)$ = Rs. 180

Total discount

= Rs. (10 + 180) = Rs. 190

Effective discount

$= \frac{190}{1000} \times 100 = 19\%$

**55.** (3) Let property of B be Rs. $x$.

$\therefore$ A's wealth $= \frac{5x}{7}$

C's wealth $= \frac{10x}{7}$

$\frac{\text{C's wealth}}{\text{A's wealth}} = \frac{\frac{10x}{7}}{\frac{5x}{7}} = 2 : 1$

**56.** (4) Let four consecutive odd numbers be $x$, $x + 2$, $x + 4$ and $x + 6$.

$\therefore \frac{x + x + 2 + x + 4 + x + 6}{4}$

$= 64$

$\Rightarrow 4x + 12 = 256$

$\Rightarrow 4x = 256 - 12 = 244$

$\Rightarrow \frac{244}{4} = 61$

$\therefore$ Largest number $= x + 6$

$= 61 + 6 = 67$

**57.** (2) Cost price of chocolate box

$= \frac{100}{120} \times 960$ = Rs. 800

Its new selling price = Rs. 1120

Gain per cent

$= \frac{1120 - 800}{800} \times 100$

$= \frac{320}{8} = 40\%$

**58.** (3) Let man's wealth be Rs. 100

Amount given to charity

= Rs. 25

Amount given to family

= Rs. 75

$\therefore$ Required per cent

$= \frac{75}{25} \times 100 = 300\%$

**59.** (3) Let actual distance be $x$ km. and time be = $t$ hours.

According to the question,

$9t = x$ ...(i)

$15t = x + 3$ ...(ii)

By equation (ii) ÷ (i), we have

$\frac{x+3}{x} = \frac{15t}{9t}$

$\Rightarrow 1 + \frac{3}{x} = \frac{15}{9}$

$\Rightarrow \frac{3}{x} = \frac{15}{9} - 1 = \frac{15 - 9}{9}$

$\Rightarrow \frac{3}{x} = \frac{6}{9}$

$\Rightarrow x = \frac{27}{6} = 4.5$ km

**60.** (2) $x\left(1 + \frac{5}{100}\right)\left(1 + \frac{15}{100}\right)$

$= 9660$

$\Rightarrow x\left(\frac{105}{100}\right)\left(\frac{115}{100}\right) = 9660$

$\Rightarrow x = \frac{9660 \times 100 \times 100}{105 \times 115}$

= Rs. 8000

**61.** (3) $\frac{\left[4\left(\frac{2x}{5} - \frac{3}{2}\right)\right]}{3} + \frac{7}{5} = \frac{37}{5}$

$\Rightarrow \frac{\left[4\left(\frac{4x - 15}{10}\right)\right]}{3} = \frac{37}{5} - \frac{7}{5}$

$= \frac{30}{5}$

$\Rightarrow \frac{4(4x - 15)}{10} = 6 \times 3 = 18$

$\Rightarrow 4x - 15 = \frac{180}{4}$

$\Rightarrow 4x - 15 = 45$

$\Rightarrow 4x = 45 + 15 = 60$

$\Rightarrow x = \frac{60}{4} = 15$

**62.** (2) $a - b = 4$, $ab = -3$
$a^2 + b^2 = (a - b)^2 + 2ab$
$= (4)^2 + 2(-3) = 16 - 6 = 10$
$a^3 - b^3 = (a - b)(a^2 + b^2 + ab)$
$= 4(10 - 3)$
$= 4 \times 7 = 28$

**63.** (4) Let the fraction be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$\Rightarrow 2x + \frac{3}{x} = \frac{29}{3}$

$\Rightarrow 2x^2 + 3 = \frac{29x}{3}$

$\Rightarrow 6x^2 + 9 = 29x$
$\Rightarrow 6x^2 - 29x + 9 = 0$
$\Rightarrow 6x^2 - 2x - 27x + 9 = 0$
$\Rightarrow 2x(3x - 1) - 9(3x - 1) = 0$
$\Rightarrow (3x - 1)(2x - 9) = 0$

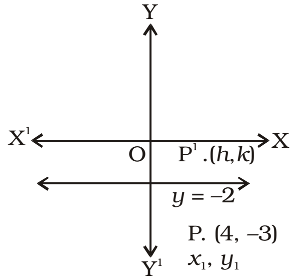
$\therefore 3x - 1 = 0 \Rightarrow x = \frac{1}{3}$;

$\therefore 2x - 9 = 0 \Rightarrow x = \frac{9}{2}$

**64.** (3) Let first term of A.P. be $a$ and $d$ be the common difference.
According to the question,

$a + 6d = -15$ ...(i)
$a + 11d = 5$ ...(ii)
$-5d = -20$
$d = 4$
$\therefore a + 6d = -15$
$\Rightarrow a + 24 = -15$
$\Rightarrow a = -15 - 24 = -39$
$\therefore t_{16} = a + 15d$
$= -39 + 15 \times 4$
$= -39 + 60 = 21$

**65.** (4)




$\therefore k - y_1 = y(y_1 - y)$

$\Rightarrow \frac{k+3}{1} = \frac{-2(-3+2)}{1}$

$\Rightarrow k + 3 = 2 \Rightarrow k = -1$
Reflection = (4, –1)

**66.** (2) Distance between points (2, 7) and $(k, -5) = 13$
$\Rightarrow (k - 2)^2 + (-5 - 7)^2 = 13^2$
$\Rightarrow k^2 + 4 - 4k + 144 = 169$
$\Rightarrow k^2 - 4k - 21 = 0$
$\Rightarrow k^2 - 7k + 3k - 21 = 0$
$\Rightarrow k(k - 7) + 3(k - 7) = 0$
$\Rightarrow (k - 7)(k + 3) = 0$
$\Rightarrow k = 7$ or $k = -3$

**67.** (1) $5x + 3y = 6$
$\Rightarrow 3y = -5x + 6$

$\Rightarrow y = -\frac{5}{3}x + 6$

Its slope $= \frac{-5}{3}$

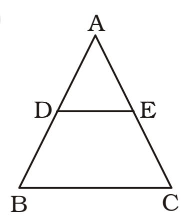
$\therefore$ Slope of line perpendicular to this line $= \frac{3}{5}$ $[\because m_1 m_2 = -1]$

Equation of line is : $y = mx + c$

$\Rightarrow y = \frac{3}{5}x - 3$

$\Rightarrow 5y = 3x - 15$
$\Rightarrow 3x - 5y = 15$

**68.** (3)




AD : DB = 2 : 5
AD = $2k$, DB = $5k$
AB = $2k + 5k = 7k$
DE || BC,
$\therefore \angle ADE = \angle ABC$
$\angle AED = \angle ACB$
By AA-similarity,
$\Delta ADE \sim \Delta ABC$

$\frac{\text{Area of }\Delta ABC}{\text{Area of }\Delta ADE} = \frac{(AB)^2}{(AD)^2}$

$\frac{\text{Area of }\Delta ABC}{8} = \frac{(7k)^2}{(2k)^2}$

$\Rightarrow$ Area of $\Delta ABC$

$= \frac{49 \times 8}{4}$

= 98 metre²

$\therefore$ Area of quadrilateral BDEC = 90 metre²

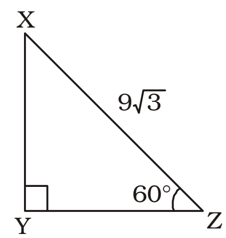
**69.** (2) $\sin 30° - \sqrt{2} \cos 30°$

$= \frac{1}{2} - \sqrt{2} \times \frac{\sqrt{3}}{2}$

$= \frac{1}{2} - \frac{\sqrt{3}}{\sqrt{2}} = \frac{1 - \sqrt{6}}{2}$

**70.** (3) In $\Delta XYZ$,

$\cos 60° = \frac{YZ}{XZ}$




$\Rightarrow \frac{1}{2} = \frac{YZ}{9\sqrt{3}}$

$\Rightarrow YZ = \frac{9\sqrt{3}}{2}$

**71.** (1) $\sec\theta = \frac{13}{12}$

$\cos\theta = \frac{12}{13}$

$\sin\theta = \sqrt{1 - \cos^2\theta}$

$= \sqrt{1 - \left(\frac{12}{13}\right)^2} = \sqrt{1 - \frac{144}{169}}$

$= \sqrt{\frac{169 - 144}{169}} = \sqrt{\frac{25}{169}} = \frac{5}{13}$

**72.** (1) In year 2015 & 2016, the revenue of product was least.

**73.** (2) Required per cent

$= \frac{525 - 500}{500} \times 100 = \frac{25}{5} = 5\%$

**74.** (4) Required
= Rs. (1075 – 950) lakhs
= Rs. 1.25 lakhs

**75.** (2) Total revenue received
= Rs. (630 + 1025 + 220 + 150) lakhs

= Rs. 2025 lakhs
= Rs. 20.25 crores
Required cumulative profit
= Rs. (20.25 – 20) crores
= Rs. 0.25 crore
= Rs. 25 lakhs.

**76.** (2) Here, close should be followed by preposition 'to'.
**Close to someone :** used for suggesting physical closeness
How dare you come close to me ?
So, correct expression : sat close to him.

**77.** (2) **Brush past (idiomatic expression)** = touch fleetingly and in passing.
**Look at the sentence :**
She brushed past him to leave the room.
Hence, a big cat brushed past me .... should be used here.

**78.** (2) does nothing but + bare infinitive (without 'to') = except
**Look at the sentence :**
She did nothing but weep.

**79.** (1) **Wistfully (Adverb)** = with a feeling of regretful longing.
**Fiscally (Adverb)** = in a way that relates to government revenue.
**Hopefully (Adjective)** = with a hope.
**Awfully (Adverb)** = terribly.

**80.** (4) **Pillage/desecrate (Verb)** = violate; profane; pollute.
⇒ The abbey was pillaged.
**Bequeath (Verb)** = leave in one's will.
**Consign (Verb)** = assign; allocate; place.
**Entrust (Verb)** = give responsibility for; charge; invest.

**81.** (2) **Cluster/assemblage (Noun)** = a collection of things; a loose cluster of diverse groups.
**Individual/solitary (Adjective)** = done or existing alone.
**Specific (Adjective)** = special; particular.

**82.** (4) **Rampart/embankment (Noun)** = a wall or bank of earth or store.
⇒ Chelsea Embankment
**Fort (Noun)** = castle; fortress
**Ditch (Noun)** = trench; channel; gutter.
**Look at the sentence :**
The car plunged into a ditch.
**Barricade (Noun)** = obstacle; blockade.

**83.** (3) **Epidemic (Adjective)** = rife; rampant; widespread.
**Look at the sentence :**
Shoplifting has reached epidemic proportions.
**Limited (Adjective)** = restricted; finite.
**Look at the sentence :**
A limited number of jobs are available.
**Contagious/infectious (Adjective)** = communicable; transmissible.

**84.** (3) recall of factual information at one's command.
**Look at the sentence :**
The genius child has all the times tables at his fingertips.

**85.** (4) to not know about something.
**Look at the sentence :**
He does not have a clue as regards his whereabouts.
**Clue (Noun)** = hint; indication; trace.

**86.** (3) As it is an interrogative sentence, it starts with a helping verb (has), followed by the subject (starting a business) + $V_3$ + object ?

**87.** (3) It is passive formation in present continuous tense.
Now: suggests that the action is still going on.
Passive is formed as follows :
Subject + is/am/are + being + $V_3$ + by + object.

**90.** (4) **Actuation** = making to start.

**91.** (4) **Motheaten** = damaged or destroyed by clothes' moths worn.

**94.** (2) By whom were you taught to ride ?
It is active formation of an interrogative sentence in simple past tense. Its passive voice is formed as follows :
Whom→ changes to by whom
By whom + was/were + subject + $V_3$ + by + object ?
**Remember :** passive formation will be an interrogative sentence if its active is an interrogative sentence.

**95.** (1) Sheetal asked me how I had solved that problem.
It is direct speech of an interrogative sentence. Its indirect speech is made as follows.
⇒ who family word (How) remains there as the connector.
⇒ 'said to' changes to asked
⇒ Present perfect changes to past perfect
⇒ 'This' changes to 'that'.
⇒ The interogative sentence changes to the assertive sentence.

**96.** (2) Different from: not the same as another
**Look at the sentence :**
This umbrella is different from mine.

**97.** (1) **And (conjunction)** = used for connecting different persons/things/birds/animals

**98.** (3) **Instead of** = in place of; in lieu of
**Look at the sentence :**
You can use milk instead of cream in this recipe.

**99.** (2) sometimes : occasionally
sometime : at some point
some time : a period of time, usually a long period of time
**Look at the sentence :**
⇒ I will finish this book sometime.
⇒ For some time, humans know that the world was round.
⇒ Sometimes I just don't understand what that man is saying.
⇒ Everybody hurts sometimes.

**100.** (1) **whose**
**whose (determiner)** = used for indicating that the following noun belongs to the person/thing mentioned previously
**Look at the sentence :**
He is the man whose opinion I respect.

❑❑❑

SET 30

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 19.08.2017 (Shift-II)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :

Swim : Water :: Fly : ?

(1) Bird (2) Air

(3) Wings (4) Plane

**2.** Select the related letters from the given alternatives :

GIK : PRT :: DFH : ?

(1) LNP (2) MOQ

(3) RPN (4) JLN

**3.** Select the related number from the given alternatives :

55 : 11 :: 125 : ?

(1) 22 (2) 5

(3) 25 (4) 101

**4.** Select the odd word from the given alternatives :

(1) Football

(2) Basketball

(3) Cricket ball

(4) Volleyball

**5.** Select the odd letters from the given alternatives :

(1) USQ (2) OMK

(3) IGE (4) VUT

**6.** Select the odd number from the given alternatives :

(1) 110 (2) 140

(3) 154 (4) 198

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :

cry, dome, super, random, ?

(1) reflex (2) done

(3) formula (4) classify

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :

OXXXXX, XXXXO, OXXX, XXO, OX, ?

(1) X (2) XO

(3) OO (4) O

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :

$1.5, \frac{9}{4}, 3, ?, 4.5, \frac{21}{4}$

(1) $\frac{15}{4}$ (2) $\frac{7}{2}$

(3) 8 (4) 9

**10.** Divyansh's birthday is on Sunday 16th July. On what day of the week will be Shaan's birthday in the same year if Shaan was born on 1st August?

(1) Tuesday

(2) Monday

(3) Wednesday

(4) Friday

**11.** The weights of 4 boxes are 30, 20, 50 and 90 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?

(1) 200 (2) 190

(3) 140 (4) 160

**12.** From the given words, select the word which cannot be formed using the letters of the given word.

**SCALDING**

(1) DICES (2) SNAIL

(3) ALIGN (4) CLANG

**13.** If OUTLINE is coded as QWVNKPG, then how will MAN be coded as?

(1) FVQ (2) RNE

(3) OCP (4) RKX

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?

$50 + 3 \div 125 \times 5 - 25 = ?$

(1) 31 (2) 17

(3) 150 (4) 55

**15.** If 26 #14 = 80; 5 # 3 = 16; 6 # 5 = 22; then what is the value of 14 # 5 = ?

(1) 17 (2) 38

(3) 4 (4) 9

**16.** Select the missing number form the given responses

| 117 | 28 | 145 |
|---|---|---|
| 35 | ? | 111 |
| 211 | 11 | 222 |

(1) 39 (2) 76

(3) 146 (4) 333

**17.** A and B start from the same point. A cycles 8 km South, then turns to her right and cycles 5 km. B cycles 3 km North, then turns West and cycles 5 km, then turns to her left and cycles 4 km. Where is B with respect to A now?

(1) 7 km North

(2) 7 km South

(3) 15 km North

(4) 15 km South

**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.

**Statement :** Should Chinese crackers be banned?

**Argument I :** No, China will be hurt by this decision.

**Argument II :** Yes, crackers kill insects.

(1) if only argument I is strong.

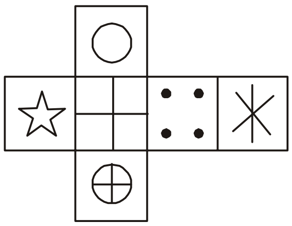
(2) if only argument II is strong.

(3) if both I and II are strong.

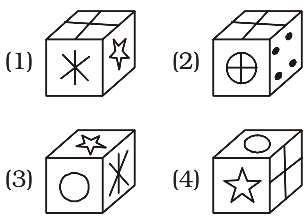
(4) if neither I nor II is strong.

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure ?

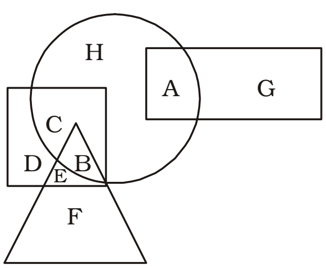
**Question Figure :**



**Answer Figures :**



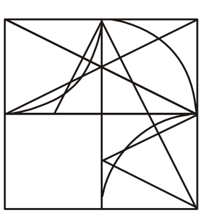
**20.** In the following figure, square represents Pharmacists, triangle represents Dancers, circle represents Gynaecologists and rectangle represents Women. Which set of letters represents Gynaecologists who are neither women nor Dancers ?



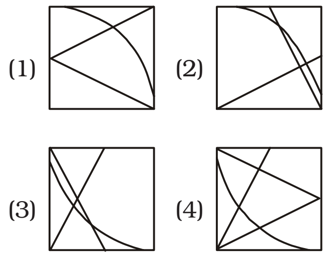

(1) F, B, H (2) B, D, H
(3) D, E, A (4) C, H

**21.** Which answer figure will complet the pattern in the question figure ?

**Question Figure :**

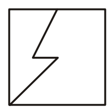


**Answer Figures :**

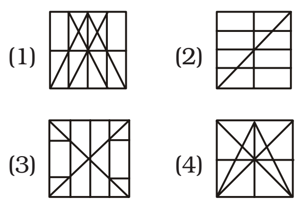


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

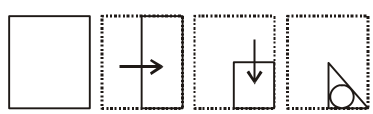


**Answer Figures :**

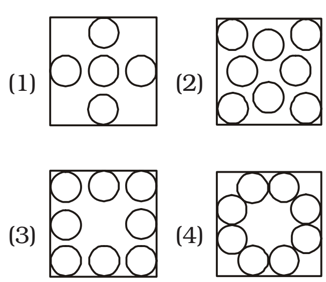


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

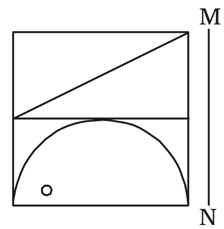


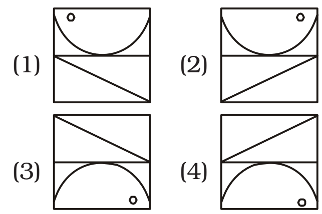
**Answer Figures :**



**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 42, 34 etc. and 'Z' can be represented by 97, 69 etc. Similarly, you have to identify the set for the word **'ROPE'**.

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | F | F | I | H | E |
| 1 | H | G | B | K | E |
| 2 | E | D | M | I | H |
| 3 | B | A | A | E | K |
| 4 | J | K | K | C | G |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | V | Y | W | W | T |
| 6 | T | X | N | R | Z |
| 7 | U | U | U | T | X |
| 8 | R | T | X | P | O |
| 9 | V | S | Z | Y | N |

(1) 10, 24, 56, 69
(2) 03, 02, 58, 79
(3) 85, 89, 88, 20
(4) 04, 32, 97, 65

## GENERAL AWARENESS

**26.** In India the reform policies were first introduced in which year?
(1) 1951 (2) 1971
(3) 1991 (4) 2001

**27.** The ________ of a firm is a relationship between inputs used and output produced by the firm.
(1) Marginal product
(2) Production function
(3) Total product
(4) Average product

**28.** ___________ means that the President of India can refer any matter that is of public importance or that which involves interpretation of Constitution to Supreme Court for advice.
(1) Original Jurisdiction
(2) Writ Jurisdiction
(3) Appellate Jurisdiction
(4) Advisory Jurisdiction

**29.** There are total ________ parliamentary seats (Rajya Sabha constituency) in Tripura.
(1) 7 (2) 1
(3) 18 (4) 10

**30.** During their rule the British persuaded or forced cultivators in Assam to grow _________.
(1) Jute (2) Tea
(3) Sugarcane (4) Wheat

**31.** The Chola kingdom mostly ruled which region of India?
(1) East (2) West
(3) North (4) South

**32.** In due course of time the meander loop cuts off from the river and forms a cut-off lake, also called an ________ lake.
(1) ox-bow (2) oasis
(3) lagoon (4) tectonic

**33.** The oceanic crust mainly consists of silica and ________.
(1) magnesium
(2) iron
(3) manganese
(4) sulphur

**34.** Order Primata comprising monkey, gorilla and gibbon is placed in class Mammalia along with order Carnivora that includes?
(1) Giraffe, Camels and Elephants
(2) Crocodile, Lizard and Snake
(3) Lion, Leopard and Tiger
(4) Tiger, Cats and Dogs

**35.** In roots, the protoxylem lies towards periphery and metaxylem lies towards the centre. Such arrangement of primary xylem is called ___________.
(1) Xylem fibres
(2) Xylem parenchyma
(3) Exarch
(4) Endarch

**36.** Which is the only one example of Mollusca Phylum?
(1) Locust (2) Butterfly
(3) Scorpion (4) Octopus

**37.** If the speed of an object moving along a straight line keeps changing, its motion is said to be ________.
(1) Uniform
(2) Periodic
(3) Circular
(4) Non-uniform

**38.** The substances which reduce friction are called ________.
(1) irregularities
(2) lubricants
(3) adhesives
(4) viscous

**39.** Notepad' is a text editor in which of the following operating systems?
(1) Windows
(2) Google Chrome
(3) Mozilla Firefox
(4) Macintosh

**40.** Magnesium oxide (MgO) + Water ($H_2O$) = ?
(1) [Mg(OH)] (2) [$Mg_2$(OH)]
(3) [$Mg(O_2H)_2$] (4) [$Mg(OH)_2$]

**41.** What is the unit of calorific value?
(1) kN/kg (2) kJ/kg
(3) kW/sec (4) kCal/sec

**42.** According to Central Pollution Control Board (CPCB), particulate size _______ micrometers or less in diameter are responsible for causing the greatest harm to human health.
(1) 0.5 (2) 2.5
(3) 5 (4) 10

**43.** __________ scheme launched by the Central Government is a special social security scheme which includes Pension and Life Insurance.
(1) Deen Dayal Upadhyaya Grameen Kaushalya Yojana
(2) Deendayal Upadhyaya Gram Jyoti Yojana
(3) Mahatma Gandhi Pravasi Suraksha Yojana
(4) Indradanush Scheme

**44.** Who invented Space Pen?
(1) Paul C. Fisher
(2) Rudolf Diesel
(3) Wright Brothers
(4) Alexander Fleming

**45.** Who was the 2015 Men's Rugby World Cup Runner-Up?
(1) New Zealand
(2) South Africa
(3) Australia
(4) England
(1) Harihara and Bukka
(2) Udayin and Shishunaga
(3) Devavarman and Vainya
(4) Maravarman and Sirmara

**47.** Which of the following won the Best Feature Film Award at the 64th National Film Awards held in the year 2017?
(1) Rustom (2) Kaasav
(3) Dangal (4) Airlift

**48.** Which of the statements given below are correct?
1. The author of the novel 'Fellside' is Victor LaValle.
2. The author of the novel 'A Head Full of Ghosts' is M.R. Carey.
3. The author of the novel 'Brave New World' is Aldous Huxley.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** Which county was in the first rank in the 2016 Human Development Index published by the United Nations Development Programme?
(1) Norway (2) Australia
(3) Germany (4) Denmark

**50.** Name the estuary on the border of India and Pakistan?
(1) Daman Creek
(2) Sir Creek
(3) Karwar Creek
(4) Mandovi Creek

## QUANTITATIVE APTITUDE

**51.** Select the correct option: Convert decimal 101 to binary.
(1) 1101001 (2) 1100111
(3) 1101011 (4) 1100101

**52.** A can paint a house in 42 days and B can do it in 21 days. Along with C, they can finish the job in 7 days only.C alone can do the painting job in how many days, ?
(1) 9 (2) 12
(3) 14 (4) 15

**53.** What is the area (in sq. cm.) of a circle whose circumference is 26.4 cm. ?
(1) 55.44 (2) 44.55
(3) 33.44 (4) 44.33

**54.** The cost price of an article is Rs. $x$. It is marked up by 120%. It is sold at Rs. 8800 after giving 20% discount. What is the value (in Rs.) of $x$ ?
(1) 7680 (2) 6000
(3) 6680 (4) 5000

**55.** A bag has Rs. 43 in the form of 5-rupee, 50-paise and 10-paise coins in the ratio of 1 : 5 : 11. What is the total number of 50-paise coins?
(1) 5 (2) 25
(3) 55 (4) 50

**56.** In the first 45 overs of a 50 over innings, the run rate was 5.8 runs per over. What is the required run rate in the remaining overs to reach the target of 295 runs?
(1) 6.9 (2) 6.8
(3) 6.7 (4) 6.6

**57.** A milkman buys milk at Rs. 24 per litre. He adds $\frac{1}{5}$ of water to it and sells the mixture at Rs. 32 per litre. What will be his gain (in %)?
(1) 50 (2) 40
(3) 30 (4) 60

**58.** When a number is increased by 105, it becomes 135% of itself. What is the number?
(1) 450 (2) 300
(3) 600 (4) 400

**59.** Two cyclists P and Q cycle at 20 km/hr and 16 km/hr towards each other respectively. What was the distance (in km.) between them when they started if they met after 40 minutes?
(1) 36 (2) 30
(3) 25 (4) 24

**60.** If the amount received at 10% per annum compound interest after 3 yrs is Rs. 19965, then what will have been the principal (in Rs.) amount?
(1) 16000 (2) 15000
(3) 17000 (4) 18000

**61.** If $\frac{8x}{3} + \frac{\left[7\left(5 - \frac{2x}{3}\right)\right]}{2} = \frac{1}{2}$, then what is the value of $x$ ?
(1) –17 (2) 51
(3) –51 (4) 17

**62.** If $a - b = -1$ and $ab = 6$, then what is the value of $(a^3 - b^3)$ ?
(1) 33 (2) –19
(3) 18 (4) 35

**63.** The sum of a fraction and three times its reciprocal is $\frac{31}{6}$. What is the fraction ?
(1) $\frac{2}{9}$ (2) $\frac{9}{2}$
(3) $\frac{5}{4}$ (4) $\frac{4}{5}$

**64.** The 2nd and 8th term of an arithmetic progression are 17 and -1 respectively. What is the 14th term?
(1) –22 (2) –25
(3) –19 (4) –28

**65.** What is the reflection of the point (2, 3) in the line $y = 4$?
(1) (2, 5) (2) (2, –5)
(3) (–2, –5) (4) (–2, 5)

**66.** Point P (–2, 5) is the midpoint of segment AB. The co-ordinates of A are (–5, $y$) and that of B are ($x$, 3). What is the value of $x$?
(1) 1 (2) –1
(3) 2 (4) –2

**67.** What is the equation of a line having a slope $-\frac{1}{3}$ and $y$-intercept equal to 6?
(1) $x + 3y = 18$
(2) $x - 3y = 6$
(3) $x + 3y = -18$
(4) $x - 3y = -6$

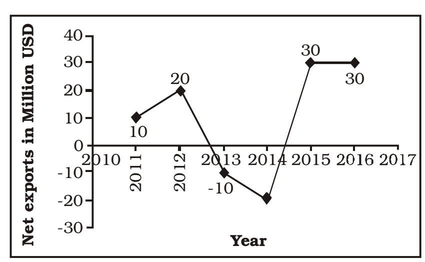
**68.** ΔABC is right angled at B. BD is its altitude. AD = 4 cm and DC = 12 cm. What is the value of AB (in cm.) ?
(1) 9 (2) 10
(3) 6 (4) 8

**69.** What is the value of $\sin 60° + \left(\frac{1}{2}\right)\text{cosec } 45°$ ?
(1) $\frac{(\sqrt{3}+2)}{2}$ (2) $\frac{(\sqrt{3}+\sqrt{2})}{\sqrt{2}}$
(3) $\frac{(\sqrt{3}+2)}{\sqrt{2}}$ (4) $\frac{(\sqrt{3}+\sqrt{2})}{2}$

**70.** ΔLMN is right angled at M. If m ∠N = 45°, what is the length (in cm.) of MN, if NL = $6\sqrt{2}$ cm. ?
(1) 3 (2) 4
(3) 2 (4) 6

**71.** If $\cos\theta = \frac{35}{37}$, then what is the value of cosec θ ?
(1) $\frac{37}{12}$ (2) $\frac{33}{12}$
(3) $\frac{35}{12}$ (4) $\frac{12}{35}$

**Directions (72–75) :** The line graph shows Net exports in million USD of a certain country (Net exports = Exports – Imports). Study the diagram and answer the following questions.



**72.** In how many years were the net exports more than that of the previous year?

(1) 1 (2) 3
(3) 4 (4) 2

**73.** If the exports in 2013 were 90 million USD then what was the imports (in million USD)?

(1) 80 (2) 110
(3) 70 (4) 100

**74.** What is the ratio of net exports in year 2016 to that in year 2012?

(1) 2 : 3 (2) 3 : 1
(3) 1 : 3 (4) 3 : 2

**75.** The cumulative net exports (in million USD) from the beginning of 2012 to the end of 2015 was

(1) 80 (2) 40
(3) 20 (4) 60

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** He was going to (1)/ like the clothes she (2)/ bought of the trip. (3)/No Error (4)

**77.** "You didn't answer my (1)/ question," he said, (2)/ stepping to her. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** After missing four days of school due to a _________ of flu, Babita struggled to make up for her missing work.

(1) bout (2) about
(3) amount (4) array

**79.** The company refunded the customer's money in ________ with the laws.

(1) according
(2) accordingly
(3) accordance
(4) accord

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Affectionate**

(1) Neglectful
(2) Aloof
(3) Sympathetic
(4) Suppressive

**81. Consequent**

(1) Inception (2) Ensuing
(3) Dawn (4) Creation

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Parsimonious**

(1) Avaricious (2) Chintzy
(3) Frugal (4) Lavish

**83. To filch**

(1) To smuggle
(2) To appropriate
(3) To encroach
(4) To philanthropy

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. In black and white**

(1) Be colour blind
(2) Not able to appreciate the finer things in life
(3) Be excessively prejudiced against something or someone
(4) A very clear choice that causes no confusion

**85. Out of date**

(1) Not have time; very busy
(2) Not stick to the schedule
(3) Fail to find a partner
(4) Old-fashioned

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** There's nothing wrong with **(having to)** a different opinion.

(1) have to
(2) has to
(3) having
(4) No Improvement

**87.** It has **(being)** too dangerous for too many people.

(1) to be
(2) become
(3) be
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Conformity to facts**

(1) Veracity
(2) Deceit
(3) Hypothesis
(4) Theory

**89. Search for and collect anything usable from discarded waste**

(1) Scavenge (2) Disperse
(3) Dissipate (4) Scatter

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Extrution (2) Extrusion
(3) Extrosion (4) Extrotion

**91.** (1) Reterate (2) Reiterate
(3) Reiterete (4) Reterete

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. Then the gigantic figure**

X-alarming spectacle
Y-slipped off the tree and stood
Z-up before us, a truly

(1) YZX (2) YXZ
(3) XZY (4) XYZ

**93. We admit as much**

X-that it is related to the body
Y-when we say that the mind
Z-is immaterial, and yet hold

(1) YXZ (2) XZY
(3) YZX (4) XYZ

**Direction (94) :** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses

the same sentence in Passive/Active voice.

**94. No one responded to my online ad.**
(1) My online ad was not responded to by anyone.
(2) My online ad is not responded to by anyone.
(3) Response by no one was given to my online ad.
(4) Response by no one is given to my online ad.

**Direction (95) :** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**95. Ajay said to my sister, "It's wonderful!"**
(1) Ajay tells my sister that it's wonderful.
(2) Ajay tells to my sister that it was wonderful.
(3) Ajay told my sister that it was wonderful.
(4) Ajay told to my sister that it's being wonderful.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

For a minute, dispel all the mental images and stereotypes; **(96)** the jargon of 'opening up,' 'flow,' 'nidra,' and 'balance'. Focus **(97)** what you need for your body. **(98)** you aren't sure, begin here — with just one asana. It's one of the basic ones **(99)** I lead every class with. You can do it as a stand-alone piece **(100)** begin with it when you're at the gym.

**96.** (1) forgetful (2) forget (3) forgot (4) forgotten
**97.** (1) of (2) for (3) off (4) on
**98.** (1) For (2) But (3) If (4) Whether
**99.** (1) this (2) these (3) that (4) those
**100.** (1) or (2) nor (3) either (4) neither

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (2) | **3.** (3) | **4.** (3) |
| **5.** (4) | **6.** (2) | **7.** (3) | **8.** (4) |
| **9.** (1) | **10.** (1) | **11.** (1) | **12.** (1) |
| **13.** (3) | **14.** (3) | **15.** (2) | **16.** (2) |
| **17.** (1) | **18.** (4) | **19.** (1) | **20.** (4) |
| **21.** (4) | **22.** (4) | **23.** (4) | **24.** (3) |
| **25.** (3) | **26.** (3) | **27.** (2) | **28.** (1) |
| **29.** (3) | **30.** (4) | **31.** (2) | **32.** (3) |
| **33.** (2) | **34.** (3) | **35.** (3) | **36.** (1) |
| **37.** (3) | **38.** (1) | **39.** (3) | **40.** (4) |
| **41.** (1) | **42.** (4) | **43.** (3) | **44.** (3) |
| **45.** (4) | **46.** (4) | **47.** (4) | **48.** (3) |
| **49.** (3) | **50.** (4) | **51.** (4) | **52.** (3) |
| **53.** (1) | **54.** (4) | **55.** (2) | **56.** (2) |
| **57.** (4) | **58.** (2) | **59.** (4) | **60.** (2) |
| **61.** (3) | **62.** (2) | **63.** (2) | **64.** (3) |
| **65.** (1) | **66.** (1) | **67.** (1) | **68.** (4) |
| **69.** (4) | **70.** (4) | **71.** (1) | **72.** (4) |
| **73.** (4) | **74.** (4) | **75.** (3) | **76.** (3) |
| **77.** (3) | **78.** (1) | **79.** (3) | **80.** (3) |
| **81.** (2) | **82.** (4) | **83.** (4) | **84.** (4) |
| **85.** (4) | **86.** (3) | **87.** (2) | **88.** (1) |
| **89.** (1) | **90.** (2) | **91.** (2) | **92.** (1) |
| **93.** (3) | **94.** (1) | **95.** (3) | **96.** (2) |
| **97.** (4) | **98.** (3) | **99.** (3) | **100.** (1) |

## EXPLANATIONS

**1.** (2) One can swim in water. Similarly, an object flies in air.

**2.** (2)

G I K : P R T : : D F H : M O Q

(G +9 → P, I +9 → R, K +9 → T; D +9 → M, F +9 → O, H +9 → Q)

**3.** (3) 55 : 11 :: 125 : 25

(55 ÷5 → 11; 125 ÷5 → 25)

**4.** (3) Except 'cricket ball' all others are different games.

**5.** (4) U $\xrightarrow{-2}$ S $\xrightarrow{-2}$ Q

O $\xrightarrow{-2}$ M $\xrightarrow{-2}$ K

I $\xrightarrow{-2}$ G $\xrightarrow{-2}$ E

But,

V $\xrightarrow{-1}$ U $\xrightarrow{-1}$ T

**6.** (2) Except the number 140, all other numbers are multiples of 11.

110 = 11 × 10
154 = 11 × 14
198 = 11 × 18
But,
140 = 11 × 13 – 3

**7.** (3) In each next term, the number of letters is increasing by one.

cry ⇒ 3 letters
dome ⇒ 4 letters
super ⇒ 5 letters
random ⇒ 6 letters
formula ⇒ 7 letters

**8.** (4) In each next term one 'X' is deleted and O shifts to the extreme right and then to the extreme left alternately.

**9.** (1) $1.5 + 0.75 = 2.25 \left(\frac{9}{4}\right)$

$2.25 + 0.75 = 3.0$

$3.0 + 0.75 = 3.75 \left(\frac{15}{4}\right)$

$3.75 + 0.75 = 4.5$

$4.5 + 0.75 = 5.25 \left(\frac{21}{4}\right)$

**10.** (1) Number of days from 16th July to 1st August = 15 + 1
= 16 days
= 2 Weeks + 2 Days
∴ 1st August = Sunday + 2
= Tuesday

**11.** (1) Possible weights of combinations of boxes :
(i) 30 + 20 = 50
(ii) 30 + 50 = 80
(iii) 30 + 90 = 120
(iv) 20 + 50 = 70
(v) 20 + 90 = 110
(vi) 50 + 90 = 140
(vii) 30 + 20 + 50 = 100
(viii) 30 + 20 + 90 = 140
(ix) 30 + 50 + 90 = 170
(x) 20 + 50 + 90 = 160
(xi) 30 + 20 + 50 + 90 = 190

**12.** (1) There is no 'E' letter in the given word. Therefore, the word DICES cannot be formed.

[S] C [AL] D [IN] G

⇒ SNAIL

S C [A L] D [I N G] ⇒ ALIGN

S [C A L] D I [N G]

⇒ CLAND

**13.** (3)

| O | U | T | L | I | N | E |
|---|---|---|---|---|---|---|
| +2 ↓ | +2 ↓ | +2 ↓ | +2 ↓ | +2 ↓ | +2 ↓ | +2 ↓ |
| Q | W | V | N | K | P | G |

Therefore,

| M | A | N |
|---|---|---|
| +2 ↓ | +2 ↓ | +2 ↓ |
| O | C | P |

**14.** (3)

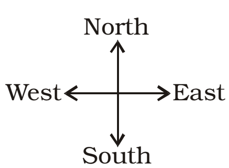
| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

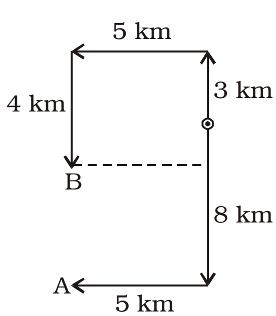
50 + 3 ÷ 125 × 5 – 25 = ?
⇒ ? = 50 × 3 – 125 ÷ 5 + 25
⇒ ? = 150 – 25 + 25
⇒ ? = 150

**15.** (2) 26 # 14 = (26 + 14) × 2
= 40 × 2 = 80
5 # 3 = (5 + 3) × 2
= 8 × 2 = 16
6 # 5 = (6 + 5) × 2
= 11 × 2 = 22
Therefore,
14 # 5 = (14 + 5) × 2
= 19 × 2 = 38

**16.** (2) First Row
145 – 117 = 28
Third Row
222 – 211 = 11
Second Row
111 – 35 = [76]

**17.** (1)

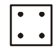



B is 7 km north of A.

**18.** (4) Neither argument I nor argument II is strong. Both the arguments reveal trivial issues.

**19.** (1) After folding the figure :

[☆] lies opposite .

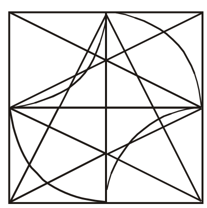
[○] lies opposite [⊕].

lies opposite [✻].

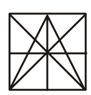
cannot be on the face adjacent to [✻]. Therefore, the cube given in the option (1) cannot be formed.

**20.** (4) Gynaecologists who are neither women nor dancers can be represented by the letters present in the circle but outside the triangle and the rectangle. Such letters are C and H.

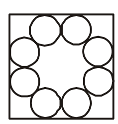
**21.** (4)



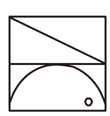
**22.** (4)



**23.** (4)



**24.** (3)



**25.** (3) R = 68, 85
O = 89
P = 88
E = 04, 14, 20, 33

| Option | R | O | P | E |
|---|---|---|---|---|
| (1) | 10 | 24 | 56 | 69 |
| (2) | 03 | 02 | 58 | 79 |
| (3) | 85 | 89 | 88 | 20 |
| (4) | 04 | 32 | 97 | 65 |

**26.** (3) Economic reforms refers to the introduction of innovative policies such as eliminating the market barriers, encouraging economic participation from private sector, reducing the fiscal deficit, increasing exports and reducing imports, etc. for increasing the growth rate of the economy. The Indian Government has introduced many Economic Reforms in India since 1991.

**27.** (2) The production function simply states the quantity of output that a firm can produce as a function of the quantity of inputs to production. The particular functional form of the production function depends on the specific technology and production processes that a firm uses.

**28.** (4) The Supreme Court has special advisory jurisdiction in matters which may specifically be referred to it by the President of India under Article 143 of the Constitution. The President may seek the opinion of the Supreme Court on any question of law or fact of public importance on which he thinks it expedient to obtain such an opinion. On such reference from the President, the Supreme Court, after giving it such hearing as it deems fit, may report to the President its opinion thereon.

**29.** (2) Tripura sends two representatives to the Lok Sabha (the lower house of the parliament of India) and one representative to the Rajya Sabha (parliament's upper house).

**30.** (2) The British forced Indian farmers to produce jute in Bengal, tea in Assam, sugarcane in Uttar Pradesh, wheat in Punjab, cotton in Maharashtra and Punjab and rice in Madras.

**31.** (4) The Chola dynasty was one of the longest-ruling dynasties in the history of southern India. The Cholas ruled for a long period from about the lat-

ter half of the 9th century to the beginning of the 13th century. The land of Cholas and Pandyas got united between 926 and 942 by the Pallava king, Vijayala and the Destroyer of Madurai, Parantaka I.

**32.** (1) An oxbow lake starts out as a curve, or meander, in a river. A lake forms as the river finds a different, shorter, course. The meander becomes an oxbow lake along the side of the river. Oxbow lakes often become swamps or bogs and they often dry up as their water evaporates. Oxbow lakes can be rich wildlife habitats.

**33.** (1) The main mineral constituents of the continental mass are silica and alumina. It is thus called sial (si-silica and al-alumina). The oceanic crust mainly consists of silica and magnesium; it is therefore called sima (si-silica and ma-magnesium).

**34.** (4) Order being a higher category, is the assemblage of families which exhibit a few similar characters. Class category includes related orders. For example, order Primata comprising monkey, gorilla and gibbon is placed in class Mammalia along with order Carnivora that includes animals like tiger, cat and dog. Class Mammalia has other orders also.

**35.** (3) The development of primary xylem can be of four types namely, exarch, endarch, centrarch and mesarch.Exarch condition involves the development of protoxylem from the outermost edge of procambial cylinder. Development is from outside to inside. Protoxylem is found outside the metaxylem . This is considered to be centripetal pattern of arrangement.

**36.** (4) Molluscs are the largest marine phylum, comprising about 23% of all the named marine organisms. Numerous molluscs also live in fresh water and terrestrial habitats. The molluscs include a number of familiar animals, including snails, oysters, clams, octopuses and squids.

**37.** (4) Non Uniform motion is defined as the motion of an object in which the object travels with varied speed and it does not cover same distance in equal time intervals, irrespective of the time interval length. If a body is involved in rectilinear motion, and if the motion is non-uniform, then the acceleration of the body must be non-zero.

**38.** (2) Lubrication is the process or technique employed to reduce friction between, and wear of one or both, surfaces in proximity and moving relative to each other, by interposing a substance called a lubricant in between them. The lubricant can be a solid, (e.g. Molybdenum disulfide MoS2) a solid/liquid dispersion, a liquid such as oil or water, a liquid-liquid dispersion (a grease) or a gas.

**39.** (1) Notepad is a simple text editor for Microsoft Windows and a basic text-editing program which enables computer users to create documents. It was first released as a mouse-based MS-DOS program in 1983, and has been included in all versions of Microsoft Windows since Windows 1.0 in 1985.

**40.** (4) Magnesium hydroxide forms in the presence of water ($MgO + H_2O \rightarrow Mg(OH)_2$), but it can be reversed by heating it to separate moisture.

**41.** (2) The amount of heat produced by different types of fuels on burning is expressed in terms of calorific value. Calorific value of a fuel may be defined as the amount of heat produced on complete burning of 1 gm of fuel. S.I. unit of calorific value of fuels is kilojoule per gram (KJ/g).

**42.** (2) Particulate matter or particle pollution is the general term for a mixture of solid particles and liquid droplets found in the air. According to Central Pollution Control Board particulate matter having the size equal to or less than 2.5 micron, came out to be the major pollutant.

**43.** (3) The Union Cabinet has approved closure in 2017 of the Mahatma Gandhi Pravasi Suraksha Yojana (MGPSY) which was set up in 2012 to address the social security-related issues of the Emigration Check Required (ECR)-category workers going abroad for employment to ECR countries.

**44.** (1) Paul C. Fisher invented the Fisher Space Pen. It is a ballpoint pen which works with thixotropic ink and a pressurized ink cartridge. It can write on almost any substance ranging from butter to steel. It also can survive a wide array of temperatures, ranging from –50 to 160 degrees Fahrenheit.

**45.** (3) The 2015 Rugby World Cup was the eighth Rugby World Cup, hosted by England. New Zealand won the cup and by defeating Australia in the final; South Africa defeated Argentina to take third place. This was the first Rugby World Cup where no Northern Hemisphere team got beyond the quarter-finals.

**46.** (1) Traditionally known as Pampakshetra of Kishkindha, Hampi is situated on the southern bank of the river Tungabhadra in Karnataka. Once it was the seat of the mighty Vijayanagara empire. The Vijayanagara Empire was established in 1336 by Harihara I and his brother Bukka Raya I of Sangama Dynasty.

**47.** (2) In the 64th National Film Awards, the top awards were bagged by Akshay Kumar, who won the Best Actor award, Surabhi, who won the Best

Actress award, and Marathi film Kasav was named the Best Feature Film of 2016.

**48.** (*) Fellside is a novel by Mike Carey

- A Head Full of Ghosts is a horror novel by American writer Paul Tremblay.
- Brave New World is a dystopian novel written in 1931 by English author Aldous Huxley

**49.** (1) The Human Development Index measures the standard of living, or quality of life, in all the countries in the world. Norway is currently ranked as the top country in human development. Norway has been ranked as the top country every year since 2001 except in 2007 and 2008 when Iceland ranked higher.

**50.** (2) Sir Creek is a 96-km strip of water disputed between India and Pakistan in the Rann of Kutch marshlands. The Creek opens up in the Arabian Sea and roughly divides the Kutch region of Gujarat from the Sindh Province of Pakistan.

**51.** (4)

| 2 | 101 | |
|---|---|---|
| 2 | 50 | → 1 |
| 2 | 25 | → 0 |
| 2 | 12 | → 1 |
| 2 | 6 | → 0 |
| 2 | 3 | → 0 |
| | 1 | → 1 |

$\therefore$ $101 = (1100101)_2$

**52.** (3) C's 1 day's work

$$= \frac{1}{7} - \frac{1}{42} - \frac{1}{21}$$

$$= \frac{6-1-2}{42} = \frac{3}{42} = \frac{1}{14}$$

$\therefore$ C, alone can paint the house in 14 days.

**53.** (1) Circumference of circle = 26.4 cm

$\therefore$ $2\pi r = 26.4$

$$\Rightarrow 2 \times \frac{22}{7} \times r = 26.4$$

$$\Rightarrow r = \frac{26.4 \times 7}{44} = 4.2 \text{ cm}$$

$\therefore$ Area of circle $= \pi r^2$

$$= \frac{22}{7} \times 4.2 \times 4.2 = 55.44 \text{ cm}^2$$

**54.** (4) Cost price of article = ₹ $x$

According to the question,

80% of 220% of $x$ = 8800

$$\Rightarrow x \times \frac{220}{100} \times \frac{80}{100} = 8800$$

$$\Rightarrow x = \frac{8800 \times 100 \times 100}{220 \times 80} = ₹\ 5000$$

**55.** (2) Let the numebr of coins of ₹ 5, 50 paise and 10 paise be $x$, $5x$ and $11x$ respectively.

Sum of their values

$$= 5x + \frac{5x \times 50}{100} + \frac{11x \times 10}{100}$$

$$= 5x + \frac{5x}{2} + \frac{11x}{10}$$

$$= \frac{50x + 25x + 11x}{10}$$

$$= \text{Rs. } \frac{86x}{10}$$

According to the question,

$$\frac{86x}{10} = 43$$

$$\Rightarrow x = \frac{43 \times 10}{86} = 5$$

Total number of coins of 50 paise = $5x = 5 \times 5 = 25$

**56.** (2) Target = 295 runs

Total runs scored in 45 overs = $45 \times 5.8 = 261$

Required run rate in remaining

$$\text{overs} = \frac{295 - 261}{50 - 45} = \frac{34}{5}$$

= 6.8

**57.** (4) Cost price of milk = Rs. 24 per litre

Selling price of milk

$$= \left(1 + \frac{1}{5}\right) \times 32$$

$$= \frac{6}{5} \times 32 = ₹\ 38.4 \text{ per litre}$$

$\therefore$ Profit per cent

$$= \frac{38.4 - 24}{24} \times 100$$

$$= \frac{14.4 \times 100}{24} = 60\%$$

**58.** (2) Let the number be $x$.

According to the question,

$x + 105 = 135\%$ of $x$

$$\Rightarrow x + 105 = \frac{135x}{100}$$

$\Rightarrow 100x + 105 \times 100 = 135x$

$\Rightarrow 135x - 100x = 105 \times 100$

$$\Rightarrow x = \frac{105 \times 100}{35} = 300$$

**59.** (4) Relative speed

= (20 + 16) kmph

= 36 km/hr

$$\text{Time} = 40 \text{ minutes} = \frac{40}{60}$$

$$= \frac{2}{3} \text{ hr}$$

Distance = Speed × Time

$$= 36 \times \frac{2}{3} = 24 \text{ km}$$

**60.** (2) $A = P\left(1 + \frac{r}{100}\right)^n$

$$\Rightarrow 19965 = P\left(1 + \frac{10}{100}\right)^3$$

$$\Rightarrow 19965 = P\left(\frac{11}{10}\right)^3$$

$$\Rightarrow P = \frac{19965 \times 10 \times 10 \times 10}{11 \times 11 \times 11}$$

= ₹ 15000

**61.** (3) $\frac{8x}{3} + \frac{\left[7\left(5 - \frac{2x}{3}\right)\right]}{2} = \frac{1}{2}$

$$\Rightarrow \frac{8x}{3} + \frac{35 - \frac{14x}{3}}{2} = \frac{1}{2}$$

$\Rightarrow \frac{8x}{3} + \frac{105-14x}{6} = \frac{1}{2}$

$\Rightarrow \frac{16x+105-14x}{6} = \frac{1}{2}$

$\Rightarrow 105 + 2x = 3$

$\Rightarrow 2x = 3 - 105 = -102$

$\Rightarrow x = \frac{-102}{2} = -51$

**62.** (2) $a - b = -1$, $ab = 6$

$\therefore a^3 - b^3 = (a-b)^3 + 3ab(a-b)$

$= (-1)^3 + 3 \times 6(-1)$

$= -1 - 18$

$= -19$

**63.** (2) Let the fraction be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the questions

$x + \frac{3}{x} = \frac{31}{6}$

$\Rightarrow \frac{x^2+3}{x} = \frac{31}{6}$

$\Rightarrow 6x^2 - 31x + 18 = 0$

$\Rightarrow 6x^2 - 4x - 27x + 18 = 8$

$\Rightarrow 2x(3x-2) - 9(3x-2) = 0$

$\Rightarrow (3x-2)(2x-9) = 0$

$\Rightarrow x = \frac{2}{3}$ or $x = \frac{9}{2}$

**64.** (3) Let the first term of A.P. be $a$ and common difference be $d$.

$\because$ an = a + (n – 1)d

a + d = 17 ..... (i)

a + 7d = – 1 ..... (ii)

Equation (i) – (ii)

$a + d = 17$
$a + 7d = -1$
$-\quad - \quad\quad +$

$-6d = 18 \Rightarrow d = -3$

$\therefore a = 17 - d = 17 - (-3) = 20$

$\therefore$ 14th term $= a + 13d$

$= 20 + 13(-3)$

$= 20 - 39 = -19$

**65.** (1) Reflection of point $(x_1, y_1)$ in the line $ax + by + c = 0$ is :

$\frac{h-x_1}{a} = \frac{k-y_1}{b}$

$= \frac{-2(ax_1+by_1+c)}{\sqrt{a^2+b^2}}$

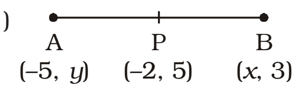
$\therefore$ Reflection of point (2, 3) in $y - 4 = 0$ :

$\frac{k-3}{1} = \frac{-2(3-4)}{\sqrt{0+1}}$

$\Rightarrow k - 3 = 2 \Rightarrow k = 2 + 3 = 5$

$\therefore$ Reflection = (2, 5).

**66.** (1)




P is mid point of line segment AB.

$\therefore \frac{-5+x}{2} = -2$

$\Rightarrow -5 + x = -4$

$\Rightarrow x = -4 + 5 = 1$

**67.** (1) Slope $= m = -\frac{1}{3}$

$y$-Intercept $= c = 6$

Equation of line, $y = mx + c$

$\therefore y = -\frac{1}{3}x + 6$

$\Rightarrow 3y = -x + 18$

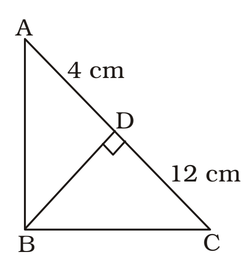
$\Rightarrow x + 3y = 18$

**68.** (4) $\Delta ABD \sim \Delta BCD$

$\frac{AD}{BD} = \frac{BD}{DC}$

$\Rightarrow BD = \sqrt{AD \times DC}$

$= \sqrt{4 \times 12} = \sqrt{48}$




$\therefore AB = \sqrt{4^2 + \left(\sqrt{48}\right)^2}$

$= \sqrt{16+48}$

$= \sqrt{64} = 8$ cm.

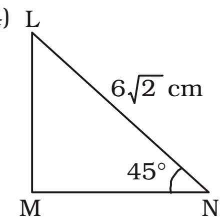
**69.** (4) $\sin 60° + \left(\frac{1}{2}\right) \text{cosec } 45°$

$= \frac{\sqrt{3}}{2} + \frac{1}{2} \times \sqrt{2}$

$= \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2}$

$= \frac{\sqrt{3}+\sqrt{2}}{2}$

**70.** (4)




$\cos 45° = \frac{MN}{LN}$

$\Rightarrow \frac{1}{\sqrt{2}} = \frac{MN}{6\sqrt{2}}$

$\Rightarrow MN = \frac{6\sqrt{2}}{\sqrt{2}} = 6$ cm.

**71.** (1) $\cos\theta = \frac{35}{37}$

$\therefore \sin\theta = \sqrt{1-\cos^2\theta}$

$= \sqrt{1-\left(\frac{35}{37}\right)^2}$

$= \sqrt{\frac{(37)^2-(35)^2}{(37)^2}}$

$= \sqrt{\frac{(37+35)(37-35)}{(37)^2}}$

$= \sqrt{\frac{72 \times 2}{372}} = \frac{12}{37}$

$\therefore \text{cosec }\theta = \frac{37}{12}$

**72.** (4) In 2 years (2012 and 2015) the total exports are more than previous years.

**73.** (4) Net exports = Exports – Imports

$\Rightarrow -10 = 90 - x$

$\Rightarrow x = 90 + 10$

= 100 million USD

**74.** (4) Required ratio = $\frac{30}{20} = \frac{3}{2}$

= 3 : 2

**75.** (3) Cumulative net exports in million from begining of 2012 to the end of 2015 = 20 – 10 – 20 + 30 = 50 – 30

= 20 million USD

**76.** (3) It is preposition related error.

Here, the error lies in the wrong use of preposition.

On the trip: during the journey

Hence, bought on the trip should be used here.

**77.** (3) **Step towards somebody :** walking in the direction of somebody

Hence, stepping towards her should be used.

**78.** (1) **Bout (Noun) :** a short period; spell

**About (preposition, adverb) :** concerning; used for indicating movement

**Amount (Noun) :** quantity; number; total

**Array (Noun) :** arrangement; line-up; formation

**79.** (3) **In accordance with :** in agreement with or in compliance with

**Look at the sentence :**

Planes are in accordance with funds.

**80.** (3) **Affectionate/sympathetic (Adjective) :** loving; fond; adoring his affectionate nature

**Neglectful/aloof (Adjective) :** indifferent; distant; not giving proper care

**Suppressive (Adj) :** tending to suppress

**81.** (2) **Consequent/ensuing (Adjective) :** resultant; resulting

**Look at the sentence :**

The consequent errors were shocking.

**Inception/dawn/creation (Noun) :** initiation; origin; genesis

**82.** (4) **Frugal/avaricious/parsimonious (Adjective) :** miserly; mean

**Look at the sentence :**

Even the parsimonious Joe paid for drinks.

**Lavish (Adjective) :** luxurious; luxuriant

A lavish banquet

**Chintzy (Adjective) :** cheap and of poor quality

**83.** (4) **Filch (Verb) :** pilfer or steal.

**Look at the sentence :**

They filched milk off morning doorsteps.

**Smuggle (Verb) :** move goods illegally into or out of a country

**Encroach/appropriate (Verb) :** seize; annex; usurp

**Phlanthropy (Noun) :** benevolence; generosity; altruism

**84.** (4) **a very clear choice that causes no confusion**

**Look at the sentence :**

Children think iis black and white (in absolute terms; unconditionally), good and bad.

**85.** (4) **old-fashioned**

**Look at the sentence :**

This necklace design is out of date.

**86.** (3) having : taking or possessing

The use of 'to' is superfluous.

**87.** (2) Present perfect tense is formed as follows:

Subject + has/have + $V_3$ + object

**88.** (1) **Deceit (Noun) :** deception; duplicity; fraud

**Hypothesis/theory (Noun) :** theorem; position; assumption

**89.** (1) **Disperse/scatter (Verb) :** disseminate; spread

**Dissipate (Verb) :** disappear; vanish

**90.** (2) Correct spelling is : Extrusion (= forcing or thrusting something out).

**91.** (2) Correct spelling is : Reiterate (= repeat, restate; say again).

**94.** (1) My online ad was not responded to by anyone.

It is active voice of simple past tense. Its passive voice is formed as follows:

subject + was/were + $V_3$ + by + obj..

**95.** (3) Ajay told my sister that it was wonderful.

It is direct speech of an assertive sentence. Its indirect speech is formed as follows:

⇒ 'said to' changes to told

⇒ connector 'that' is used

⇒ simple present changes to simple past

**96.** (2) An Imperative sentence starts with $V_1$.

**97.** (4) **Focus on somebody/something (phrasal verb) :** give most of your attention to someone/something

**Look at the sentence :**

Try to focus on the most importent facts.

**98.** (3) **If (conjunction) :** used for introducing a conditional clause

**Look at the sentence :**

If you don't work hard, you will not get through the examination.

**99.** (3) **That**

**that (pronoun) :** used for referring to a specific thing previously mentioned.

That is a good idea.

**100.** (1) **Or (conjunction) :** used for linking alternatives

**Look at the sentence :**

You can do it in the morning or in the evening.

Neither... nor → used for showing that something is not true of two people/things.

Either... or → used for referring to a situation in which there is a choice between two persons/things, but both together are not possible.

❑❑❑

**SET 31**

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 19.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Night : Stars :: Day : ?
(1) Sun (2) Blue
(3) Work (4) Planet

**2.** Select the related letters from the given alternatives :
BEH : KNQ :: FIL : ?
(1) ONM (2) NLJ
(3) ORU (4) OMK

**3.** Select the related number from the given alternatives :
6 : – 3 :: –18 : ?
(1) 3 (2) 9
(3) –9 (4) –6

**4.** Select the odd word from the given alternatives :
(1) Cyan (2) Crimson
(3) Indigo (4) Sky blue

**5.** Select the odd letters from the given alternatives :
(1) JPV (2) UIO
(3) KQW (4) LRX

**6.** Select the odd number from the given alternatives :
(1) 8 (2) 27
(3) 100 (4) 125

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
employ, oyster, error, ornate, tennis, ?
(1) neptune (2) nature
(3) terminate (4) isomer

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
XXXXXO, XXXXOX, XXXOXX, XXOXXX, XOXXXX,?
(1) OXXXXX (2) OXXXXO
(3) OXXXOX (4) XXXXXX

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.

$-\frac{7}{4}$, –1, –0.25, ? , $\frac{5}{4}$, 2

(1) 0.5 (2) 0.75
(3) 0.25 (4) 1

**10.** Dhruv's birthday is on Sunday 28th May. On what day of the week will be Sahil's Birthday in the same year if Sahil was born on 19th October?
(1) Saturday (2) Wednesday
(3) Thursday (4) Sunday

**11.** The weights of 4 boxes are 30, 20, 60 and 70 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 180 (2) 170
(3) 120 (4) 150

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**PROXIMAL**
(1) MOLAR (2) AXIOM
(3) REALM (4) APRIL

**13.** If PONDERS is coded as ONMCDQR, then how will MAT be coded as?
(1) LZS (2) OLJ
(3) AEG (4) LDZ

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
80 × 16 ÷ 4 + 2 – 8 = ?
(1) 11 (2) 64
(3) 30 (4) 5

**15.** If 35 % 31 = 12, 92 % 30 = 14 then what is the value of 15 % 24 = ?
(1) 12 (2) 25
(3) 33 (4) 28

**16.** Select the missing number from the given responses

| 111 | 314 | 205 |
|---|---|---|
| 34 | 39 | 102 |
| ? | 275 | 103 |

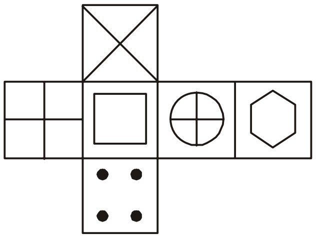
(1) 172 (2) 75
(3) 77 (4) 170

**17.** X and Y both start from a same point X walks 17 m West, then turns to his right and walks 13 m. At the same time, Y walks 9 m North, then turns East and walks 7 m, then turns to his left and walks 4 m. Where is Y now with respect to the position of X?
(1) 24 metre West
(2) 10 metre East
(3) 10 metre West
(4) 24 metre East

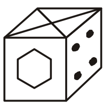
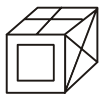
**18.** In the question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.
**Statement :**
Should songs be eliminated from Indian movies.
**Argument I :** Yes, Hollywood movies are hit despite having no songs.
**Argument II :** No, songs help increase length of the movie.
(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

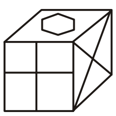
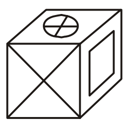
**19.** Which of the following cube in the answer figures cannot be made based on the unfolded cube in the question figure?

**Question Figure :**

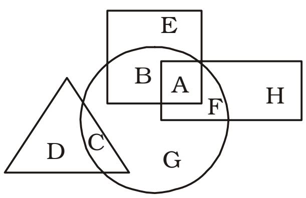


**Answer Figures :**

(1)  (2) 

(3)  (4) 

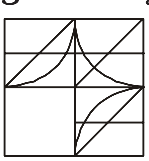
**20.** In the following figure, square represents Pharmacists, triangle represents Singers, circle represents Surgeons and rectangle represents Mothers. Which set of letters represents surgeons who are either mothers or singers?



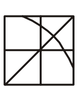
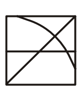

(1) E,D,G (2) A,F,C
(3) A,D,C (4) H,B,C

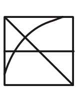
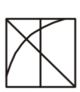
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



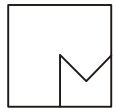
**Answer Figures :**

(1)  (2) 

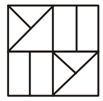
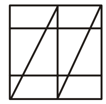
(3)  (4) 

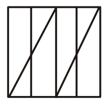
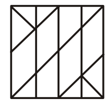
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



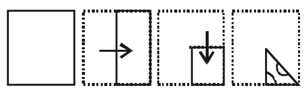
**Answer Figures :**

(1)  (2) 

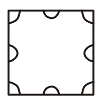
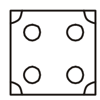
(3)  (4) 

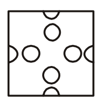
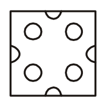
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures :**



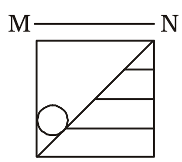
**Answer Figures :**

(1)  (2) 

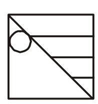
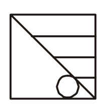
(3)  (4) 

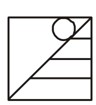
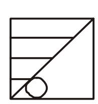
**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of **Matrix-I** are numbered from 0 to 4 and that of **Matrix-II** are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 34, 42 etc. and 'Z' can be represented by 76, 88 etc. Similarly, you have to identify the set for the word **'RIDE'**.

**Matrix–I**

| 0 | G | K | H | A | M |
|---|---|---|---|---|---|
| 1 | D | C | F | E | G |
| 2 | J | G | L | D | J |
| 3 | I | H | A | E | K |
| 4 | B | C | K | C | G |

**Matrix–II**

| 5 | U | O | Y | V | O |
|---|---|---|---|---|---|
| 6 | T | V | Q | O | T |
| 7 | V | Z | P | S | W |
| 8 | O | Y | P | Z | R |
| 9 | O | V | V | V | Z |

(1) 30, 23, 85, 66
(2) 89, 30, 10, 13
(3) 10, 24, 68, 78
(4) 10, 11, 88, 86

## GENERAL AWARENESS

**26.** A ______deficit is financed by net capital flows from the rest of the world, thus by a capital account surplus.
(1) Current Account
(2) Saving Account
(3) Capital Account
(4) Asset Account

**27.** _______is defined as the output per unit of variable input.
(1) Marginal product
(2) Production function
(3) Total product
(4) Average product

**28.** "Taxes on lands and buildings" is listed in the ______list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global 4) Concurrent

**29.** There are total ______ parliamentary seats (Rajya Sabha constituency) in Maharashtra.
(1) 11 (2) 19
(3) 10 (4) 1

**30.** Akbar was ______ years old when he became emperor.
(1) 16 (2) 19
(3) 13 (4) 10

**31.** Sultan Mahmud was a ruler of_____.
(1) Persia (2) Ghazni
(3) Lahore (4) Arab

**32.** As the river enters the plain it twists and turns forming large bends known as ______.
(1) crooks (2) flections
(3) rounds (4) meanders

**33.** The method of soil conservation in which stones, grass, soil are used to build barriers along contours and trenches are made in front of the barriers to collect water is called?
(1) Mulching
(2) Contour barriers
(3) Rock dam
(4) Terrace farming

**34.** In male reproductive system, the testes are situated outside the abdominal cavity within a pouch called _____.
(1) Glands
(2) Scrotum
(3) Testicular Lobules
(4) Seminiferous Tubules

**35.** Which of the following is not among the 3 main classes of Algae?
(1) Chlorophyceae
(2) Rhodophyceae
(3) Phaeophyceae
(4) Gymnosperms

**36.** Sycon (Scypha), Spongilla (Fresh water sponge) and Euspongia (Bath sponge) are examples of which Phylum?
(1) Coelenterata
(2) Platyhelminthes
(3) Ctenophora
(4) Porifera

**37.** If the force applied on the object is in the direction opposite to the direction of motion, the speed of the object ____.
(1) increases (2) stops
(3) decreases (4) no effect

**38.** The SI unit of acceleration is ____.
(1) metres per seconds squared
(2) metres per second
(3) seconds per metre
(4) seconds per metre squared

**39.** In Microsoft Excel, the _____ function returns the smallest value among the values passed as arguments.
(1) LEAST (2) LESS
(3) MIN (4) LOW

**40.** Fire extinguishers emit which gas?
(1) Carbon monoxide
(2) Chlorine
(3) Carbon dioxide
(4) Nitrogen

**41.** What is formed when Magnesium is burnt?
(1) Baking Soda
(2) Calcium Carbonate
(3) Ash
4) Vinegar

**42.** The salt concentration (measured as salinity in parts per thousand), is less than ____ % in inland waters.
(1) 5 (2) 20
(3) 50 (4) 75

**43.** scheme launched by the Central Government aims to improve rural livelihoods and promote rural development and strengthen the Panchayati Raj across the country.
(1) Pradhan Mantri Fasal Bima Yojana
(2) Gram Uday Se Bharat Uday Abhiyan
(3) Stand up India scheme
(4) National RU URBAN Mission

**44.** Who discovered Photon?
(1) George Crum
(2) Albert Einstein
(3) Henry Cavendish
(4) Humphry Davy

**45.** Who is the winner of 2016-17 Premier League (Football)?
(1) Leicester City
(2) Manchester City
(3) Chelsea
(4) Manchester United

**46.** Gol Gumbaz was designed by?
(1) Ustad Ahmad of Lahouri
(2) George Wittet
(3) Henry Irwin
(4) Yaqut of Dabul

**47.** Which of the following was the winner of the Grammy Awards 2016 "Country Song of the Year" ?
(1) Chances Are
(2) Girl Crush
(3) Hold My Hand
(4) Traveller

**48.** A. The author of the novel 'Bird Box' is Victor LaValle.
B. The author of the novel 'The Devil in Silver' is Josh Malerman.
C. The author of the novel 'Fellside' is Victor LaValle.
Which of the statements given above are not correct?
(1) A and B (2) B and C
(3) A and C (4) A, B and C

**49.** In April 2017, to address growing unemployment, which country has abolished the 457 Visa Programme used by thousands of temporary foreign workers, a majority of them Indians?
(1) USA (2) Canada
(3) Australia (4) UK

**50.** SAARC Agriculture Centre (SAC) is based in which city?
(1) Islamabad (2) Dhaka
(3) Colombo (4) Kathmandu

## QUANTITATIVE APTITUDE

**51.** What least number must be subtracted from 3401, so that the sum is completely divisible by 11?
(1) 3 (2) 1
(3) 2 (4) 0

**52.** M is thrice as good as workman as N and together they finish a piece of work in 30 days. In how many days will M alone finish the work?
(1) 50 (2) 40
(3) 60 (4) 45

**53.** What is the area (in sq cm.) of a regular hexagon of side 14 cm?
(1) $147\sqrt{3}$ (2) $441\sqrt{3}$
(3) $196\sqrt{3}$ (4) $294\sqrt{3}$

**54.** If two T-shirts are offered free on purchase of five T-shirts, what is the effective discount (in %) on each T-shirt?
(1) 40 (2) 20
(3) 30 (4) 50

**55.** The ratio of present ages of R and S is 11:17. 11 years ago, the ratio of their ages was 11 : 20. What is R's present age (in years) ?
(1) 51 (2) 33
(3) 22 (4) 40

**56.** The average marks of 40 students in an examination was 25. It was later found that the marks of one student had been wrongly entered as 73 instead of 37. What is the value of correct average ?
(1) 24.3 (2) 24.1
(3) 24.5 (4) 24.7

**57.** A wholesaler sells a jacket to a retailer at a profit of 5% and the retailer sells it to a customer at a profit of 10%. If the customer pays Rs. 4158, what had it cost (in Rs.) to the wholesaler?
(1) 3500 (2) 3400
(3) 3300 (4) 3600

**58.** A number is increased by 84, it becomes 107% of itself. What is the number?
(1) 600 (2) 900
(3) 1500 (4) 1200

**59.** A boat goes a certain distance at 30 km/hr and comes back the same distance at 60 km/hr. What is the average speed (in km/hr) for the total journey?
(1) 45 (2) 50
(3) 40 (4) 35

**60.** An amount fetched a total simple interest of Rs. 3200 at the rate of 6.25% per year in 4 years. What is the amount (in Rs.) ?
(1) 13800 (2) 11800
(3) 12800 (4) 14800

**61.** If $\frac{x}{2}-\frac{\left[4\left(\frac{15}{2}-\frac{x}{3}\right)\right]}{3}=-\frac{x}{18}$, then what is the value of $x$?
(1) –10 (2) $\frac{9}{8}$
(3) 10 (4) $-\frac{9}{8}$

**62.** If $a^3 + b^3 = 152$ and $a + b = 8$ then what is the value of $ab$?
(1) 2 (2) 11
(3) –10 (4) 15

**63.** A fraction is greater than its reciprocal by $\frac{9}{20}$. What is the fraction?
(1) $\frac{5}{4}$ (2) $\frac{4}{5}$
(3) $\frac{3}{4}$ (4) $\frac{4}{3}$

**64.** What is the sum of the first 9 terms of an arithmetic progression if the first term is 7 and the last term is 55?
(1) 219 (2) 137
(3) 231 (4) 279

**65.** What is the reflection of the point (5, – 2) in the line $x = -1$ ?
(1) (–7, –2) (2) (5, 0)
(3) (7, –2) (4) (5, 2)

**66.** Point A divides segment BC in the ratio 4 : 1. Co-ordinates of B are (6, 1) and C are $\left(\frac{7}{2}, 6\right)$. What are the co-ordinates of point A?
(1) (4 , 3) (2) (4 , 5)
(3) (2 , 5) (4) (3 , 5)

**67.** What is the slope of the line parallel to the line passing through the points (5, –1) and (4, –4)?
(1) –3 (2) $-\frac{1}{3}$
(3) 3 (4) $\frac{1}{3}$

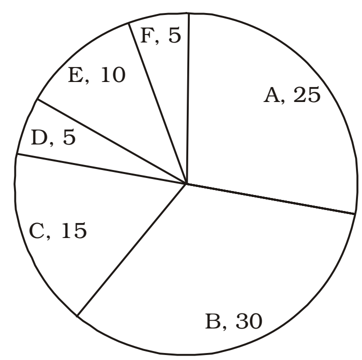
**68.** ΔXYZ is similar to ΔPQR. If ratio of perimeter of ΔXYZ and perimeter of ΔPQR is 16 : 9 and PQ = 3.6 cm, then what is the length (in cm) of XY ?
(1) 4.8 (2) 3.2
(3) 6.4 (4) 8.6

**69.** What is the value of $\left(\frac{1}{2}\right)$ sec 30° + $\sqrt{2}$ tan 60°?
(1) $\frac{(1+3\sqrt{2})}{\sqrt{3}}$ (2) $\frac{(\sqrt{3}+2)}{\sqrt{3}}$
(3) $\sqrt{3}+2$ (4) $\frac{(\sqrt{3}+2)}{2}$

**70.** ΔDEF is right angled at E. If m∠D = 45°, then what is the value of cosec F × cotD?
(1) $\frac{1}{\sqrt{2}}$ (2) 2
(3) $\frac{1}{2}$ (4) $\sqrt{2}$

**71.** If sec θ = $\frac{25}{24}$, then what is the value of sin θ?
(1) $\frac{24}{25}$ (2) $\frac{7}{25}$
(3) $\frac{24}{7}$ (4) $\frac{25}{7}$

**Directions (72–75) :** Students from different countries (A, B, C, D, E, F) participated in a certain seminar. The pie-chart shows how many students came from each of the six participating countries. Study the diagram and answer the following questions.




**72.** The biggest contingent of students was from which country?
(1) A (2) C
(3) B (4) D

**73.** What is the angular measure (in degrees) of the sector representing country A?
(1) 100 (2) 25
(3) 50 (4) 120

**74.** By what count (in %) students from country B at the seminar were more than the students from country E?

(1) 40 (2) 200
(3) 20 (4) 18

**75.** If the cost of total spending on transport for the seminar was Rs. 9 lakhs and the cost of hosting the students was Rs. 15000 per student then what was the ratio of hosting cost of all the students to that of spending on transport?
(1) 2 : 5 (2) 3 : 2
(3) 1 : 1 (4) 1 : 2

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** He was such a (1)/ wonderful person (2)/ into so many ways. (3)/ No Error (4)

**77.** The magician placed the ball (1)/ underneath of his hat and (2)/ made a mystic sign above it. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Our nation's _____ into another country's war could pull us into the crisis.
(1) intervention
(2) intention (3) perfection
(4) invention

**79.** As a fitness ______, Deepti is always preaching to her friends about the importance of working out.
(1) enthusiasm
(2) enthusiast
(3) enthusiastic
(4) enthusiastically

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the given word.

**80. Phonetic**
(1) Mute (2) Reticent
(3) Silent (4) Spoken

**81. To Astound**
(1) To Bewilder
(2) To Tranquil
(3) To Placid
(4) To Serene

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the given word.

**82. Disdain**
(1) Antipathy (2) Admiration
(3) Derision (4) Scorn

**83. Canonical**
(1) Approved (2) Official
(3) Sanctioned
(4) Unorthodox

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. It goes without saying**.
(1) To silently bear the injustice
(2) Something which is implied to be obvious
(3) There is no point in doing something after you are told to do it
(4) Break long relationship with someone

**85. To let someone off**
(1) To let someone fall
(2) To leave someone in his present state
(3) To release someone from blame
(4) To refuse to answer

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No improvement".

**86.** May be they **(has had)** a fight.
(1) were had
(2) was having
(3) were having
(4) No improvement

**87.** We wouldn't want them to think we **(doing)** anything immoral.
(1) was doing
(2) were doing
(3) done
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Excessively lengthy speech**.
(1) Concision (2) Verbiage
(3) Curt (4) Succinct

**89. An ornamented staff carried by rulers on ceremonial occasions as a symbol of sovereignty**
(1) Spectacle (2) Receptacle
(3) Sceptre (4) Zephyr

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Contusion (2) Contution
(3) Cuntusion
(4) Cuntution

**91.** (1) Scemitars (2) Scimitars
(3) Scimetars (4) Scemetars

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. Three times this was**
X. only be compared to the deepest notes of thunder
Y. shook with the noise, that can
Z. repeated, and each time the earth
(1) ZXY (2) YZX
(3) ZYX (4) YXZ

**93. The causes and their**
X. in the same series
Y. one order, they stand
Z. effects belong to the
(1) ZXY (2) YZX
(3) YXZ (4) ZYX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**Sunita will bake two dozen cupcakes for the bake sale.**
(1) For the bake sale, two dozen cookies will be baked by Sunita.

(2) For the bake sale, two dozen cookies is baked by Sunita.
(3) Baking of two dozen cookies by Sunita will be done for the bake sale.
(4) Baking of two dozen cookies by Sunita is done for the bake sale.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**My mother said to my father, "I am very busy now."**

(1) My mother told my father that I am very busy now.
(2) My mother told my father that she is very busy then.
(3) My mother told my father that she was very busy then.
(4) My mother told my father that I was very busy now.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

This was enough **(96)** the book store-owner-turned librarian Husain to asses its valuable contents. "The preface of the book read: 'painters **(97)** technical knowledge to paint, but lack to understand nature, **(98)** they fail to create a masterpiece," points out Husain, adding, "All I **(99)** in my life is about books and from books. The grand library **(100)** the palace is a cache of knowledge."

**96.** (1) for (2) of (3) to (4) from
**97.** (1) has (2) has had (3) have (4) to have
**98.** (1) if (2) that (3) hence (4) this
**99.** (1) learning (2) learned (3) to learn (4) learns
**100.** (1) from (2) at (3) to (4) off

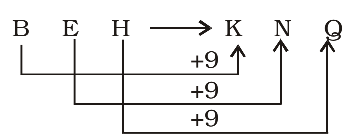
## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (3) | **3.** (2) | **4.** (2) |
| **5.** (2) | **6.** (3) | **7.** (4) | **8.** (1) |
| **9.** (1) | **10.** (3) | **11.** (2) | **12.** (3) |
| **13.** (1) | **14.** (4) | **15.** (1) | **16.** (3) |
| **17.** (4) | **18.** (4) | **19.** (1) | **20.** (2) |
| **21.** (2) | **22.** (1) | **23.** (4) | **24.** (1) |
| **25.** (2) | **26.** (1) | **27.** (4) | **28.** (2) |
| **29.** (2) | **30.** (3) | **31.** (2) | **32.** (4) |
| **33.** (2) | **34.** (2) | **35.** (4) | **36.** (4) |
| **37.** (3) | **38.** (1) | **39.** (3) | **40.** (3) |
| **41.** (3) | **42.** (1) | **43.** (2) | **44.** (2) |
| **45.** (3) | **46.** (4) | **47.** (2) | **48.** (4) |
| **49.** (3) | **50.** (2) | **51.** (3) | **52.** (2) |
| **53.** (4) | **54.** (1) | **55.** (2) | **56.** (2) |
| **57.** (4) | **58.** (4) | **59.** (3) | **60.** (3) |
| **61.** (3) | **62.** (4) | **63.** (1) | **64.** (4) |
| **65.** (1) | **66.** (2) | **67.** (3) | **68.** (3) |
| **69.** (1) | **70.** (4) | **71.** (2) | **72.** (3) |
| **73.** (1) | **74.** (2) | **75.** (2) | **76.** (3) |
| **77.** (2) | **78.** (1) | **79.** (2) | **80.** (4) |
| **81.** (1) | **82.** (2) | **83.** (4) | **84.** (2) |
| **85.** (3) | **86.** (3) | **87.** (2) | **88.** (2) |
| **89.** (3) | **90.** (1) | **91.** (2) | **92.** (3) |
| **93.** (4) | **94.** (1) | **95.** (3) | **96.** (1) |
| **97.** (3) | **98.** (3) | **99.** (2) | **100.** (2) |

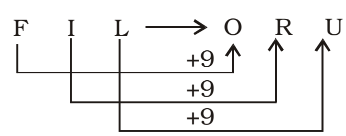
## EXPLANATIONS

**1.** (1) Stars are visible in the night in the sky. Similarly, Sun is visible during the day.

**2.** (3)




Similarly,




**3.** (2) $\frac{6}{-2} = -3$

Similarly,

$\frac{-18}{-2} = 9$

**4.** (2) Except Crimson, all others are different shades of blue colour.

**5.** (2) $J \xrightarrow{+6} P \xrightarrow{+6} V$

$K \xrightarrow{+6} Q \xrightarrow{+6} W$

$L \xrightarrow{+6} R \xrightarrow{+6} X$

But,

$U \xrightarrow{-12} I \xrightarrow{+6} O$

**6.** (3) Except the number 100, all other numbers are perfect cubes. The number 100 is a perfect square.

$8 = 2 \times 2 \times 2$
$27 = 3 \times 3 \times 3$
$125 = 5 \times 5 \times 5$

But,

$100 = 10 \times 10$

**7.** (4) The next word of the series starts with the last two letters of the previous word.

empl<u>oy</u> → oyst<u>er</u> → err<u>or</u> → orna<u>te</u> → tenn<u>is</u> → isomer

**8.** (1) In each subsequent term O shifts one place towards left.

XXXXXO → XXXXOX → XXXOXX → XXOXXX → XOXXXX → OXXXXX

**9.** (1) $-\frac{7}{4} = -1.75$

$-1.75 + 0.75 = -1.00$
$-1.00 + 0.75 = -0.25$
$-0.25 + 0.75 = 0.50$

$0.50 + 0.75 = 1.25 \left(= \frac{5}{4}\right)$

$1.25 + 0.75 = 2.00$

**10.** (3) 28th May ⇒ Sunday

Number of days from 28th May to 19th October

= 3 + 30 + 31 + 31 + 30 + 19 days

= 144 days

Number of odd days = $\frac{144}{7}$

= 20 Weeks 4 days

∴ 19th October ⇒ Sunday + 4

= Thursday

**11.** (2) Possible weights of boxes :

(i) 30 + 20 = 50 kilograms
(ii) 30 + 60 = 90 kilograms
(iii) 30 + 70 = 100 kilograms
(iv) 20 + 60 = 80 kilograms
(v) 20 + 70 = 90 kilograms
(vi) 60 + 70 = 130 kilograms
(vii) 30 + 20 + 60 = 110 kilograms

(viii) 30 + 20 + 70 = 120 Kilograms

(ix) 30 + 60 + 70 = 160 Kilograms

(x) 20 + 60 + 70 = 150 Kilograms

(xi) 30 + 20 + 60 + 70
= 180 Kilograms

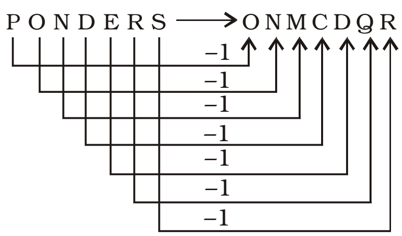
**12.** (3) There is no 'E' letter in the given word. Therefore, the word REALM cannot be formed.

P [R O] X I [M A L] ⇒ MOLAR

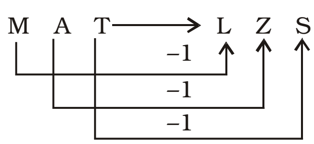
P R [O X I M A] L ⇒ AXIOM

[P R] O X [I] M [A L] ⇒ APRIL

**13.** (1)




Therefore,




**14.** (4)

| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

80 × 16 ÷ 4 + 2 – 8 = ?

⇒ ? = 80 ÷ 16 – 4 × 2 + 8

⇒ ? = 5 – 8 + 8 = [5]

**15.** (1) 35 % 31 = 12
⇒ 3 + 5 + 3 + 1 = 12
92 % 30 = 14
⇒ 9 + 2 + 3 + 0 = 14
Therefore,
15% 24 = ?

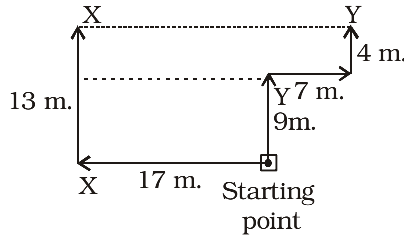
⇒ 1 + 5 + 2 + 4 = [12]

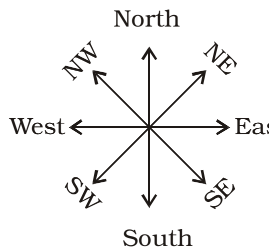
**16.** (3) First Column

111 – 34 = [77]

Second Column
314 – 39 = 275
Third Column
205 – 102 = 103

**17.** (4)

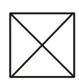
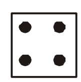


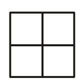
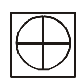



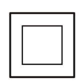
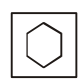

Y is 24 metre east of X.

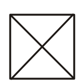
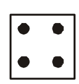
**18.** (4) Neither argument I nor argument II is strong. We know that citing an example is a bad argumentation. Songs are included into the movies to give some special effects and depict certain scenes or moments elegantly.

**19.** (1) After folding the figure :

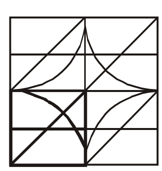
 lies opposite 

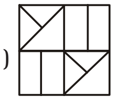
 lies opposite 

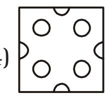
 lies opposite 

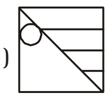
 and  cannot be on the adjacent faces. Therefore, cube given in the Answer Figure (1) cannot be formed.

**20.** (2) Surgeons who are either mothers or singers can be represented by the regions common to circle and triangle as well as circle and rectangle. Such regions have been marked as A, F and C.

**21.** (2) 

**22.** (1) 

**23.** (4) 

**24.** (1) 

**25.** (2) R ⇒ 89
I ⇒ 30
D ⇒ 10, 23
E ⇒ 13, 33

| Option | R | I | D | E |
|---|---|---|---|---|
| (1) | 30 | 23 | 85 | 66 |
| (2) | 89 | 30 | 10 | 13 |
| (3) | 10 | 24 | 68 | 78 |
| (4) | 10 | 11 | 88 | 86 |

**26.** (1) Current account deficit is a measurement of a country's trade where the value of the goods and services it imports exceeds the value of the goods and services it exports. A country that has current account deficit (spending more abroad than it receives from sales to the rest of the world) must finance it by selling assets or by borrowing abroad. Thus, any current account deficit is of necessity financed by a net capital inflow.

**27.** (4) Average Product is the total product or output divided by the number of input units, usually a variable input such as labour. In contrast, the marginal product is the change in output that occurs when one more unit of input (such as a unit of labour) is added.

**28.** (2) Taxes on lands and buildings come under State List or List-II. It is a list of 61 items (initially there were 66 items in the list) in Schedule Seven to the Constitution of India. The state list contains the areas in respect of which only the State Legislature can make laws.

**29.** (2) The Rajya Sabha (Council of States) is the upper house of the Parliament of India. Maharashtra sends 19 Rajya Sabha members. The present Rajya Sabha has 245 members; 233 members are elected by state assembly members and 12 are nominated by the President.

**30.** (3) Akbar became the king in 1556 at the age of 13. Bairam Khan was appointed as Akbar's regent. Soon after coming to power Akbar defeated Hemu, the general of the Afghan forces, in the Second Battle of Panipat.

**31.** (2) Sultan Mahmud was the ruler of the Ghaznavid Empire from 997 until his death in 1030. He turned Ghazni into the rich capital of an extensive empire which included modern-day Afghanistan, most of Iran, and parts of northwest India including modern-day Pakistan. He was also the first ruler to carry the title Sultan.

**32.** (4) A meander is a bend in a sinuous watercourse or river that forms when moving water in a stream erodes the outer banks and widens its valley, and the inner part of the river has less energy and deposits silt. Meanders are typical of the middle and lower course of a river when vertical erosion is replaced by lateral erosion, plus deposition within the floodplains.

**33.** (2) In contour barriers method, stones, grass, soil are used to build barriers along contours, while trenches are made in front of the barriers to collect water. They intercept downslope flowing water and soil particles. These barriers slow down the water movement and reduce its erosive force. They also filter out and trap many of the suspended soil particles, keeping them from being washed out of the field.

**34.** (2) A pair of testes is situated outside the abdominal cavity within a pouch called scrotum. The scrotum helps in maintaining the low temperature of the testes (2-2.5o C lower than the normal internal body temperature) necessary for spermatogenesis.

**35.** (4) Algae are classified into three main classes – Chlorophyceae (Green algae), Phaeophyceae (Brown algae), and Rhodophyceae (Red algae). These divisions are based on major photosynthetic pigments present, form of stored food, cell wall composition and number of flagella and position of insertion.

**36.** (4) Sponges are aquatic, mostly marine, primitive multicellular animals that are sessile, plant-like animal are fixed to some submerged solid rock or shell and are incapable of any movement. They come under Porifera phylum. The Porifera are exclusively marine except for a single family of fresh water species.

**37.** (3) In physics, if a force on an object has a component in the same direction as the motion, the work that force does on the object is positive. If a force on an object has a component in the opposite direction to the motion, the work done by that force on the object is negative. So, if an object is moving and there is an applied force in the opposite direction of the motion, the object will decelerate or slow down.

**38.** (1) Calculating acceleration involves dividing velocity by time — or in terms of units, dividing meters per second [m/s] by second [s]. Dividing distance by time twice is the same as dividing distance by the square of time. Thus, the SI unit of acceleration is the meter per second squared.

**39.** (3) In Excel, the MIN function can be used to return the smallest value from a set of data. For example, the fastest time in a race, the lowest temperature, or the smallest sales number. Arguments can be provided as constants, or as cell references or ranges, for example :

= MIN (5, 10)

= MIN (A1, A2, A3)

= MIN (A1 : A10)

**40.** (3) Generally, fire extinguishers use compressed non-flammable carbon dioxide gas that extinguishes work by displacing oxygen, or taking away the oxygen element of the fire triangle. $CO_2$ extinguishers are suitable for electrical hazard and fires involving flammable liquids like petrol, diesel and oils. They are ideal for industrial and office environments.

**41.** (3) When Magnesium burns air it reacts with oxygen present in air to form magnesium oxide: $2Mg + O_2 \rightarrow 2MgO$. Magnesium oxide is a crumbly, whitish powder that looks like ash. The formation of magnesium oxide is a direct combination reaction of two elements magnesium and oxygen.

**42.** (1) Salinity is the measure of all the salts dissolved in water. Salinity is usually measured in parts per thousand (ppt or %). The average ocean salinity is 35ppt and the average river water salinity is 0.5ppt or less.

**43.** (2) Gram Uday Se Bharat Uday Abhiyan, launched by Prime Minister Narendra Modi in April 2016, aims to "generate efforts to increase social harmony across villages", "promote rural development" and "foster farmers' welfare and livelihood of the poor". The scheme also involves development of panchayat raj, optimum utilization of funds of panchayat Raj, with focus on clean drinking water and sanitation, role of women and rural development and social inclusion of welfare of scheduled caste, schedule tribes and also person with disabilities.

**44.** (2) Photon, also called light quantum, refers to minute energy packet of electromagnetic radiation. The concept originated in 1905 in Albert Einstein's explanation of the photoelectric effect, in which he proposed the existence of discrete energy packets during the transmission of light. The 1921 physics Nobel prize was awarded to Einstein in most famous for his theory of relativity, but it is his discovery of photons that is mentioned by the Swedish Academy.

**45.** (3) Chelsea won the 2016-17 Premier League champions after defeating West Bromwich Albion 1-0 at the Hawthornson 12 May, 2017. It was their fifth title of the Premier League era. The 2016-17 season saw Chelsea equal the Premier League records for consecutive wins in a season.

**46.** (4) Gol Gumbaz is the mausoleum of king Mohammed Adil Shah, Sultan of Bijapur. The tomb, located in Bijapur, Karnataka in India, was completed in 1656 by the architect Yaqut of Dabul. It is constructed as per the "Deccan architecture".

**47.** (2) Girl Crush won the award for Best Country Song at the 58th Annual Grammy Awards heldat the Staples Center in Los Angeleson February 15, 2016. It is a song written by Lori McKenna, Hillary Lindsey and Liz Rose, and performed by American country music group Little Big Town.

**48.** (4) Bird Box is a 2014 post-apocalyptic novel and the debut work of Josh Malerman, the lead singer of The High Strung. The Devil in Silver is a novel by Victor LaValle that was first published in 2012. Fellside, published in April 2016, has been authored by M.R. Carey.

**49.** (3) Australia, in April 2017, abolished the 457 Visa Programme used by thousands of temporary foreign workers, a majority of them Indians to address growing unemployment in that country. Instead, Australia wants to adopt 'Australians first' approach to skilled migration.

**50.** (2) SAARC Agriculture Centre (SAIC) is based in Dhaka, Bangladesh. Known as SAARC Agricultural Information Centre till 2007, SAIC is the first regional Centre established by the SAARC. It started functioning in 1988 with a mandate for information management, primarily in the field of agriculture and allied discipline.

**51.** (3) 11 ) 3401 (309

```
 33
 ---
 101
  99
 ---
   2
```

Here, remainder = 2

$\therefore$ 3401 – 2 = 3399 which is divisible by 11.

**52.** (2) Time taken by M = $x$ days (let).

$\therefore$ Time taken by N = $3x$ days

According to the question,

$$\frac{1}{x} + \frac{1}{3x} = \frac{1}{30}$$

$$\Rightarrow \frac{3+1}{3x} = \frac{1}{30}$$

$\Rightarrow 3x = 30 \times 4$

$$\Rightarrow x = \frac{30 \times 4}{3}$$

= 40 days = Time taken by M

**53.** (4) Area of a regular hexagon

$$= \frac{3\sqrt{3}}{2} \times \text{side}^2$$

$$=- \left(\frac{3\sqrt{3}}{2} \times 14 \times 14\right) \text{ sq. cm.}$$

$= 294\sqrt{3}$ sq. cm.

**54.** (1) Marked price of each T-shirt = Rs. 100 (let).

According to the question,

Total marked price of five T-shirts = Rs. 500

Total marked price of two T-shirts = Rs. 200

$\therefore$ Discount on each T-shirt

$$= \frac{200}{500} \times 100 = \text{Rs. } 40$$

$\therefore$ Discount per cent = 40% as marked price = Rs. 100

**55.** (2) R's present age = $11x$ years

S's present age = $17x$ years

According to the question,

11 years ago,

$$\frac{11x-11}{17x-11} = \frac{11}{20}$$

$$\Rightarrow \frac{x-1}{17x-11} = \frac{1}{20}$$

$\Rightarrow 20x - 20 = 17x - 11$

$\Rightarrow 20x - 17x = 20 - 11$

$\Rightarrow 3x = 9 \Rightarrow x = 3$

$\therefore$ R's present age = 11 × 3

= 33 years

**56.** (2) Difference between incorrect and correct mark.

= 37 – 73 = –36

$$\therefore \text{Correct average} = 25 - \frac{36}{40}$$

$$= 25 - \frac{9}{10} = 25 - 0.9 = 24.1$$

**57.** (4) Let the C.P. for the wholesale dealer be Rs. $x$.

According to the question,

$$x \times \frac{105}{100} \times \frac{110}{100} = 4158$$

$$\Rightarrow x = \frac{4158 \times 10000}{105 \times 110}$$

= Rs. 3600

**58.** (4) Let the number be $x$.

According to the question,

7% of $x$ = 84

$$\Rightarrow x \times \frac{7}{100} = 84$$

$$\Rightarrow x = \frac{8400}{7} = 1200$$

**59.** (3) Here, distances are same.

$\therefore$ Average speed

$$= \left(\frac{2xy}{x+y}\right) \text{kmph.}$$

$$= \left(\frac{2 \times 30 \times 60}{30+60}\right) \text{ kmph.}$$

$= \left(\frac{2 \times 30 \times 60}{90}\right)$ kmph

= 40 kmph

**60.** (3) Principal $= \frac{\text{Interest} \times 100}{\text{Time} \times \text{Rate}}$

$= \frac{3200 \times 100}{4 \times 6.25}$ = Rs. 12800

**61.** (3) $\frac{x}{2} - \left[4\left(\frac{15}{2} - \frac{x}{3}\right)\right] \div 3 = \frac{-x}{18}$

$\Rightarrow \frac{x}{2} - \left[30 - \frac{4x}{3}\right] \div 3 = \frac{-x}{18}$

$\Rightarrow \frac{x}{2} - \frac{30}{3} + \frac{4x}{9} = \frac{-x}{18}$

$\Rightarrow \frac{x}{2} + \frac{4x}{9} + \frac{x}{18} = 10$

$\Rightarrow \frac{9x + 8x + x}{18} = 10$

$\Rightarrow 18x = 180 \Rightarrow x = \frac{180}{18} = 10$

**62.** (4) $a^3 + b^3 = 152$

$\Rightarrow (a + b)^3 - 3ab\,(a + b) = 152$

$\Rightarrow (8)^3 - 3ab \times 8 = 152$

$\Rightarrow 512 - 24ab = 152$

$\Rightarrow 24ab = 512 - 152 = 360$

$\Rightarrow ab = \frac{360}{24} = 15$

**63.** (1) Let the fraction be $x$.
According to the question,

$x - \frac{1}{x} = \frac{9}{20}$

$\Rightarrow \frac{x^2 - 1}{x} = \frac{9}{20}$

$\Rightarrow 20x^2 - 20 = 9x$

$\Rightarrow 20x^2 - 9x - 20 = 0$

$\Rightarrow 20x^2 - 25x + 16x - 20 = 0$

$\Rightarrow 5x\,(4x - 5) + 4\,(4x - 5) = 0$

$\Rightarrow (4x - 5)\,(5x + 4) = 0$

$\Rightarrow x = \frac{5}{4}$ or, $-\frac{4}{5}$

OR

$x - \frac{1}{x} = \frac{9}{20} = \frac{9}{4 \times 5}$

$= \frac{25 - 16}{4 \times 5}$

$\Rightarrow x - \frac{1}{x} = \frac{5}{4} - \frac{4}{5}$

or, $-\left(\frac{4}{5} - \frac{5}{4}\right)$

$\Rightarrow x = \frac{5}{4}$ or, $\frac{-4}{5}$

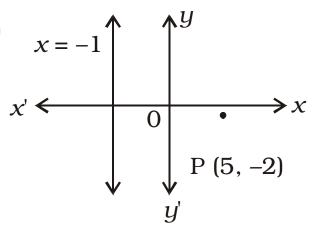
**64.** (4) First term $= a = 7$
Last term $= l = 55$
Number of terms $= n = 9$

$\therefore$ Required sum $= \frac{n}{2}\,(a + l)$

$= \frac{9}{2}\,(7 + 55)$

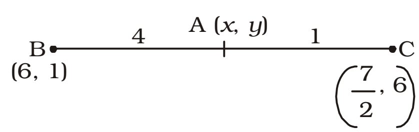
$= \frac{9 \times 62}{2} = 279$

**65.** (1)




Equation $x = -1$ is parallel to $y$-axis.
Point (5, –2) lies in the fourth quadrant.
Its image in $x = -1$ that is parallel to $y$-axis will be (–6, –2) that will be (–7, –2) with respect to $y$-axis.

**66.** (2)




$\frac{m_1}{m_2} = \frac{4}{1}$

$(x_1, y_1) = (6, 1)$;

$(x_2, y_2) = \left(\frac{7}{2}, 6\right)$

$\therefore x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}$

$= \frac{4 \times \frac{7}{2} + 1 \times 6}{1 + 4} = \frac{14 + 6}{5}$

$= \frac{20}{5} = 4$

$y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2} = \frac{4 \times 6 + 1 \times 1}{4 + 1}$

$= \frac{25}{5} = 5$

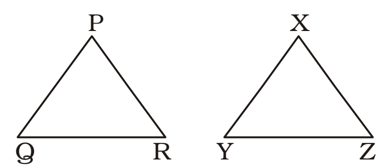
$\therefore$ Co-ordinates of A = (4, 5)

**67.** (3) Slope of straight line passing through $(x_1, y_1)$ and $(x_2, y_2)$

$= \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 + 1}{4 - 5}$

$= \frac{-3}{-1} = 3$

**68.** (3)




$\Delta XYZ \sim \Delta PQR$

$\therefore \frac{XY}{PQ} = \frac{YZ}{QR} = \frac{ZX}{RP}$

$= \frac{XY + YZ + ZX}{PQ + QR + RP}$

$\Rightarrow \frac{XY}{3.6} = \frac{16}{9}$

$\Rightarrow XY = \frac{16}{9} \times 3.6 = 6.4$

**69.** (1) Expression

$= \frac{1}{2}\sec 30° + \sqrt{2}\tan 60°$

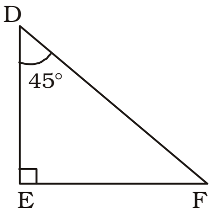
$= \frac{1}{2} \times \frac{2}{\sqrt{3}} + \sqrt{2} \times \sqrt{3}$

$= \frac{1}{\sqrt{3}} + \sqrt{6}$

$= \frac{1 + \sqrt{6} \times \sqrt{3}}{\sqrt{3}}$

$= \frac{1 + 3\sqrt{2}}{\sqrt{3}}$

**70.** (4)




In $\Delta$DEF,

$\angle EFD = 45°$

$\angle EDF = 45°$

$\therefore$ cosec F × cot D

= cosec 45° × cot 45°

$= \sqrt{2} \times 1 = \sqrt{2}$

**71.** (2) $\sec\theta = \frac{25}{24} \Rightarrow \cos\theta = \frac{24}{25}$

$\therefore \sin\theta = \sqrt{1-\cos^2\theta}$

$= \sqrt{1-\left(\frac{24}{25}\right)^2}$

$= \sqrt{1-\frac{576}{625}}$

$= \sqrt{\frac{625-576}{625}}$

$= \sqrt{\frac{49}{625}} = \frac{7}{25}$

**72.** (3) A maximum of 30 students came from country B.

**73.** (1) Total students who came from 6 countries.

= 25 + 30 + 15 + 5 + 10 + 5

= 90

$\because 90 \equiv 360°$

$\therefore 25 \equiv \frac{360°}{90} \times 25 = 100°$

**74.** (2) Required per cent

$= \left(\frac{30-10}{10}\right) \times 100$

= 200%

**75.** (2) Required ratio

= 90 × 15000 : 900000

= 135 : 90

= 3 : 2

**76.** (3) **Into** is used to a position in or inside something.

**Look at the sentence :**

He dived into the water.

**In many ways** = to a great degree.

Hence, in (so) many ways ...... should be used here.

**77.** (2) **Underneath** = under or below something else.

**Look at the sentence :**

The coin rolled underneath the piano.

Hence, underneath his hat and .... should be used here. Preposition 'of ' is not needed here.

**78.** (1) **Intervention (Noun)** = interference by a state in another's affairs.

**79.** (2) **Enthusiast (Noun)** = a person who is very interested in a particular activity or subject; admirer.

**80.** (4) **Phonetic (Adjective)** = using special symbols to represent each different speech sound; spoken; connected with the sounds of human speech.

**Look at the sentence :**

Spanish is a more phonetic language than English.

**81.** (1) **Astound (Verb)** = shock or greatly surprise; astonish; bewilder.

**Bewilder (Verb)** = to confuse somebody.

**Look at the sentences :**

The subsequent response and quality of entries astounded the organisers.

She was astounded by his arrogance.

He was totally bewildered by her sudden change of mood.

**82.** (2) **Disdain (Noun)** = contempt; scornfulness; the feeling of not liking someone or something and thinking that they do not deserve your respect.

**Admiration (Noun)** = respect and warm; commendation; acclaim.

**Look at the sentences :**

He regards the political process with disdain.

She gazed in admiration at his broad, muscular shoulders.

**83.** (4) **Canonical (Adjective)** = conforming to a general rule or acceptable procedure; orthodox.

**Unorthodox (Adjective)** = contrary to what is usual or accepted; unconventional; not orthodox.

**Look at the sentences :**

His proposals were generally accepted as canonical.

Steiner was recognised as an original if unorthodox thinker.

**84.** (2) **Go without saying** = be obvious.

**Look at the sentence :**

It goes without saying that lay appointees must be selected with care.

**85.** (3) **To let someone off** = punish someone lightly or not at all for a misdemeanour or offence; excuse someone from a task or obligation.

**Look at the sentence :**

I let him off because he seemed so sorry.

**86.** (3) Possibility is obvious. Hence, Past progressive i.e. were having/doing ....should be used.

**87.** (2) As the sense suggests, Past progressive ... should be used.

**90.** (1) **Contusion (Noun)** = a region of injured tissue or skin in which blood capillaries have been ruptured.

**91.** (2) **Scimitar(s)** = a sword with a curved blade that is sharp only on its outer edge.

**94.** (1) For the bake sale, two dozen cookies will be baked by Sunita.

Subject + will be + $V_3$ + by + Object.

**95.** (3) said to $\Rightarrow$ told

I am very busy $\Rightarrow$ she was very busy

Now $\Rightarrow$ then

**99.** (2) Here, Past Simple i.e. learnt/learned ..... should be used.

SET **32**

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 20.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Spring : Spiral :: Bangle : ?
(1) Glass (2) Circle
(3) Ornament (4) Gold

**2.** Select the related letters from the given alternatives :
WUV : TRS :: QOP : ?
(1) XYZ (2) CBA
(3) ABZ (4) NLM

**3.** Select the related number from the given alternatives :
7.25 : 7.75 :: 9 : ?
(1) 9.5 (2) 7
(3) 10 (4) 8.5

**4.** Select the odd word from the given alternatives :
(1) Sparrow (2) Pigeon
(3) Crow (4) Housefly

**5.** Select the odd letters from the given alternatives :
(1) RQS (2) XWV
(3) MLN (4) FEG

**6.** Select the odd number from the given alternatives :
(1) 700 (2) 250
(3) 350 (4) 640

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.
Oxygen, Toil, Arouse, Arson, Tenuous, ?
(1) Onion (2) Lustrous
(3) Lion (4) Onto

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
ZYX, VUT, QPO, MLK, HGF, ?
(1) DCB (2) CBA
(3) BCD (4) EDC

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.
400, –200, 100, ? , 25, –12.5
(1) –50 (2) 50
(3) 75 (4) –75

**10.** Bhavin's birthday is on Monday 29th May. On what day of the week will be Rachit's birthday in the same year if Rachit was born on 17th November?
(1) Saturday (2) Wednesday
(3) Sunday (4) Friday

**11.** The weights of 4 boxes are 30, 70, 60 and 90 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 250 (2) 200
(3) 190 (4) 220

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**MYSTIQUE**
(1) EMITS (2) TEAMS
(3) SUITE (4) QUIET

**13.** If IMPLORE is coded as GKNJMPC, then how will HUB be coded as?
(1) AWN (2) WAO
(3) FSZ (4) TEY

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
72 × 9 – 14 + 2 = ?
(1) 20 (2) 86
(3) 30 (4) 36

**15.** If 52 % 32 = 40, 22 % 20 = 4 then what is the value of 15 % 11 = ?
(1) 39 (2) 11
(3) 29 (4) 8

**16.** Select the missing number from the given alternatives :

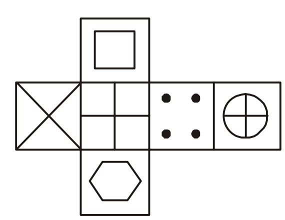
| 216 | 16 | 49 |
|---|---|---|
| 3 | 4 | ? |
| 6 | 2 | 7 |

(1) 42 (2) 56
(3) 2 (4) 5

**17.** A woman in a shopping complex walks 250 m East, then she turns North and walks 100 m, then she turns West and walks 120 m, then she turns to her left and walks 100 m. Where is she now with reference to her starting position?
(1) 130 m East
(2) 130 m West
(3) 370 m East
(4) 370 m West

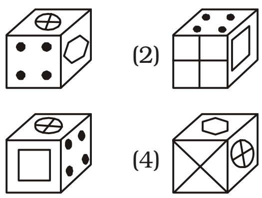
**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
**Statements :**
All drinks are food.
No eatables are drinks.
**Conclusions :**
I. Some food are eatables.
II. Some eatables are food.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure ?
**Question Figure :**

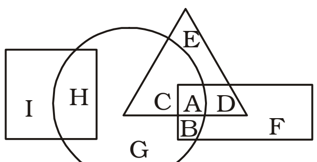


**Answer Figures :**

(1) (2) (3) (4)



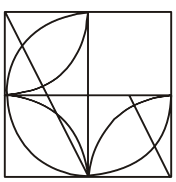
**20.** In the following figure, square represents Dentists, triangle represents Collectors, circle represents Indians and rectangle represents Women. Which set of letters represents Indians who are either collectors or women ?




(1) A, B, C (2) D, B, E
(3) C, G, H (4) E, F, I

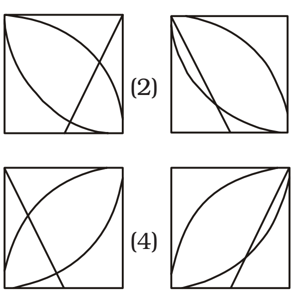
**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**



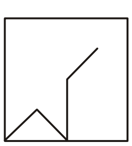
**Answer Figures :**

(1) (2) (3) (4)



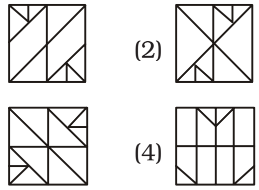
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



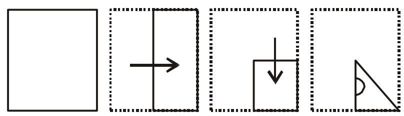
**Answer Figures :**

(1) (2) (3) (4)



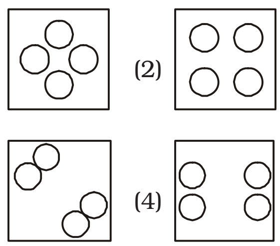
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**



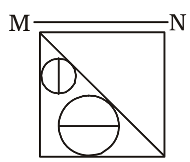
**Answer Figures :**

(1) (2) (3) (4)



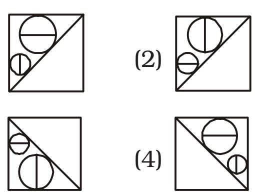
**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1) (2) (3) (4)



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 13, 34 etc and 'Z' can be represented by 79, 85 etc. Similarly, you have to identify the set for the word **'PLOT'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | J | B | B | I | A |
| 1 | A | G | F | K | L |
| 2 | H | E | F | G | C |
| 3 | I | A | M | A | K |
| 4 | J | F | C | B | M |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | O | U | O | P | U |
| 6 | P | X | U | N | Y |
| 7 | W | W | N | R | Z |
| 8 | Z | N | T | S | Y |
| 9 | U | W | U | U | X |

(1) 58, 14, 57, 87
(2) 44, 04, 76, 86
(3) 03, 23, 86, 69
(4) 23, 04, 99, 99

## GENERAL AWARENESS

**26.** The demand for a normal good increases with ________ in the consumer's income.
(1) increase (2) decrease
(3) constant (4) double

**27.** Short run marginal cost curve cuts the average variable cost curve from _______ at the minimum point of average variable cost.
(1) top (2) below
(3) right (4) left

**28.** "Forests" is listed in the _________ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** Which Fundamental Right in the Indian Constitution states that all persons shall be equally protected by the laws of the country?

(1) Right to Equality
(2) Right to Freedom
(3) Right against Exploitation
(4) Right to Freedom of Religion

**30.** ______ was imprisoned for the rest of his life by Aurangzeb.
(1) Akbar (2) Shah Jahan
(3) Jahangir (4) Babur

**31.** Name the Commission that came to India in 1928 to reform India's constitutional system.
(1) Rowlatt Act
(2) Pitt's India Act
(3) Partition of Bengal
(4) Simon Commission

**32.** ________ is an example of intrusive igneous rock.
(1) Conglomerate
(2) Shale
(3) Sandstone
(4) Granite

**33.** The longitudinal valley lying between lesser Himalaya and the ___________ are known as Duns.
(1) Himadri (2) Himachal
(3) Shiwaliks (4) Tibet

**34.** A multicellular organism grows by ___________.
(1) Cell addition
(2) Cell explosion
(3) Cell implosion
(4) Cell division

**35.** The male sex organs in a flower is the _________.
(1) Zoospores
(2) stamen
(3) pistil
(4) Chlorophyceae

**36.** In animals like Annelids, Molluscs, organs have associated to form functional systems, each system concerned with a specific physiological function. This pattern is called _______ system level of organization.
(1) organ (2) open
(3) closed (4) coelom

**37.** Contact force is another name for ________.
(1) Friction
(2) Magnetic force
(3) Electrostatic force
(4) Muscular force

**38.** The force of friction between two surfaces will increase if:
(1) a layer of lubricant is kept between the two surfaces
(2) the two surfaces are pressed harder
(3) air gap is created between the two surfaces
(4) irregularities on both the surfaces are removed

**39.** An absolute _______ contains the complete address of a file on the Internet.
(1) JavaScript (2) URL
(3) SQL (4) String

**40.** A change in which no new substances are formed is called
(1) Physical Change
(2) Chemical Change
(3) Rusting
(4) Galvanisation

**41.** The property of metal by which it can be drawn into wires is called ____________.
(1) maleability
(2) viscosity
(3) ductility
(4) tensile strength

**42.** ____________ is the number of deaths in the population during a given period.
(1) Natality
(2) Mortality
(3) Immigration
(4) Emigration

**43.** _________ scheme by the Central Government aims at setting up an organized rural Panchayat in order to make the villages more self-sustained.
(1) Gram Uday Se Bharat Uday Abhiyan
(2) Pradhan Mantri Ujjwala Yojana
(3) Pradhan Mantri Sur akshit Matritva Yojana
(4) Vidyanjali Yojana

**44.** Who discovered Circulatory System?
(1) Thomas Edison
(2) William Harvey
(3) Robert Hooke
(4) Robert Boyles

**45.** Which country did India lose to in the semi finals of the Men's Cricket World Cup 2015?
(1) Sri Lanka
(2) New Zealand
(3) Pakistan
(4) Australia

**46.** Buland Darwaza is located in?
(1) West Bengal
(2) Gujarat
(3) Uttar Pradesh
(4) Tamil Nadu

**47.** Which of the following award is given for distinguished service in any field including service rendered by the Government servants?
(1) Ashok Chakra
(2) Dada Saheb Phalke Awards
(3) Arjuna Award
(4) Padma Shri

**48.** Which of the statements given below are correct?
1. The author of 'The Great Indian Novel' is A.P.J. Abdul Kalam.
2. The author of 'A Foreign Policy For India' is I.K Gujral.
3. 'Wings of Fire' is an Autobiography of A.P.J. Abdul Kalam.

(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** In April 2017, diplomatic ties were re-established after 37 years between Cuba and
(1) India (2) Morocco
(3) Sri Lanka (4) USA

**50.** Nepal shares a border with which other country besides India?
(1) China
(2) Bhutan
(3) Bangladesh
(4) Afghanistan

## QUANTITATIVE APTITUDE

**51.** What least number must be added to 213, so that the sum is completely divisible by 9?
(1) 3 (2) 2
(3) 1 (4) 4

**52.** A can do a work in 12 days and B in 24 days. If they work on it together for 4 days, then what fraction of work is left?
(1) $\frac{1}{3}$ (2) $\frac{1}{2}$
(3) $\frac{1}{4}$ (4) $\frac{1}{5}$

**53.** What is the area (in sq. cm.) of an equilateral triangle of side 6 cm?
(1) $36\sqrt{3}$ (2) 9
(3) 36 (4) $9\sqrt{3}$

**54.** What is the effective discount on two successive discounts of 20% and 25%?
(1) 45% (2) 40%
(3) 50% (4) 60%

**55.** Profit of Rs. 12,400 has to be divided among three partners A, B and C in the ratio 5 : 7 : 8. How much does B get (in Rs.) ?
(1) 4340 (2) 3440
(3) 3340 (4) 4430

**56.** The average weight of P, Q and R is 47 kg. If the average weight of P and Q be 32.5 kg and that of Q and R be 48.5 kg, then what is the weight of Q (in kg.)?
(1) 25 (2) 21
(3) 29 (4) 33

**57.** A shopkeeper by selling 5 items, earns a profit equal to the selling price of 1 item. What is his profit per cent?
(1) 20% (2) 25%
(3) 16% (4) 22.5%

**58.** What is the value of 20% of 500% of 50?
(1) 0.5 (2) 5000
(3) 500 (4) 50

**59.** To cover a distance of 90 km in 2.5 hours what should be the average speed of the car in metre/second?
(1) 10 (2) 20
(3) 30 (4) 40

**60.** If in 3 years at simple interest the principal increases by 18%, what will be the compound interest (in Rs.) earned on Rs. 25,000 in 3 years at the same rate?
(1) 4775.4 (2) 5774.4
(3) 4557.4 (4) 5575.4

**61.** If $5x + 6(3 - 2x) = 4$, then what is the value of $x$?
(1) 1 (2) 3
(3) 2 (4) 4

**62.** If $a + b = 1$ and $ab = -6$, then what is the value of $(a^3 + b^3)$?
(1) 17 (2) 15
(3) 19 (4) 13

**63.** The sum of a non-zero number and twenty times its reciprocal is 9. What is the number ?
(1) –5 (2) 3
(3) –3 (4) 5

**64.** If the 3rd and the 5th term of an arithmetic progression are 13 and 21, what is the 13th term?
(1) 53 (2) 49
(3) 57 (4) 61

**65.** What is the reflection of the point (3, –5) in the origin?
(1) (–3, –5) (2) (5, –3)
(3) (–5, –3) (4) (–3, 5)

**66.** Point P is the mid-point of segment AB. Co-ordinates of P are (5, –1) and A are (2, –4). What are the co-ordinates of point B?
(1) (6, 4) (2) (8, 2)
(3) (1,–2) (4) (–6, –2 )

**67.** What is the slope of the line perpendicular to the line passing through the points (–2, 3) and (2, 0)?
(1) $\frac{4}{3}$ (2) $\frac{3}{4}$
(3) $-\frac{3}{4}$ (4) $-\frac{4}{3}$

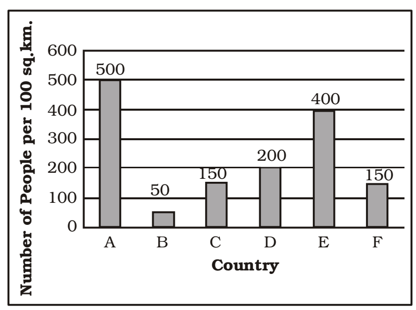
**68.** ΔABC is similar to ΔPQR. If ratio of perimeters of ΔABC and ΔPQR is 1 : 2 and PQ = 10 cm; then what is the length of AB (in cm.)?
(1) 5 (2) 20
(3) 25 (4) 15

**69.** What is the value of sin 30° + cos 30°?
(1) $\frac{(\sqrt{6}+1)}{\sqrt{3}}$
(2) $\frac{(\sqrt{3}+2)}{\sqrt{3}}$
(3) $\frac{(1+\sqrt{3})}{2}$
(4) $\frac{5}{\sqrt{3}}$

**70.** ΔABC is right angled at B. If $m\angle A = 30°$., then sec C =?
(1) $\frac{1}{2}$ (2) $\frac{1}{\sqrt{2}}$
(3) 2 (4) $\frac{1}{\sqrt{3}}$

**71.** If $\sin\theta = \frac{12}{13}$, then what is the value of cot θ?
(1) $\frac{13}{12}$ (2) $\frac{5}{13}$
(3) $\frac{5}{12}$ (4) $\frac{13}{5}$

**Directions (72–75) :** The bar graph shows the population density of six countries. Study the diagram and answer the following questions.




**72.** What is the ratio of the population densities of country C to country D?
(1) 3 : 4 (2) 4 : 3
(3) 5 : 4 (4) 4 : 5

**73.** What is the difference in the average number of people living per 1,000 sq. km. in countries E and F?

(1) 250 (2) 4000
(3) 400 (4) 2500

**74.** Population density of country E is greater than population density of country D by :
(1) 50% (2) 100%
(3) 200% (4) 300%

**75.** If area of country B is 20,00,000 sq. km., what is its population?
(1) 10000000 (2) 2500000
(3) 25000000 (4) 1000000

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The phone that (1)/my father bought is different (2)/than your.(3)/No Error (4)

**77.** As soon as (1)/I reach my office (2)/I will mail you the files.(3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Because she had a ________ demeanour, she was a desirable friend.
(1) pleasant (2) severe
(3) mean (4) nasty

**79.** If your child has not met the _____________ vaccination requirements, he or she will not be allowed to attend public school.
(1) optional
(2) referral
(3) compulsory
(4) guideline

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Stymie**
(1) Explicate (2) Abet
(3) Impede (4) Aid

**81. Suffix**
(1) Addition (2) Basic
(3) Root (4) Focal

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Sultry**
(1) Frigid (2) Muggy
(3) Sticky (4) Soggy

**83. Supple**
(1) Flexible (2) Brittle
(3) Pliable (4) Bending

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Barking up the wrong tree**
(1) Scolding the one who is innocent.
(2) Expecting a favour from a heartless person.
(3) Looking in the wrong place.
(4) Requesting but in an arrogant manner.

**85. Call it a day**
(1) To start a job wishing for success.
(2) To take a break or a holiday.
(3) Assign different days to different tasks.
(4) To declare the end of a task.

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** Would you mind **(to carrying)** this bag for me.
(1) to carry
(2) carrying
(3) carry
(4) No improvement

**87.** The child **(would have jumped)** with delight on seeing the joker at the circus.
(1) jumping
(2) jumped
(3) to jump
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88 The quality or state of being exposed to the possibility of being attacked or harmed**
(1) Vigour
(2) Vulnerability
(3) Fortitude
(4) Clout

**89. A solemn promise or undertaking**
(1) Pledge (2) Deceit
(3) Myth (4) Perjury

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) consenssus
(2) concensus
(3) concenssus
(4) consensus

**91.** (1) presedents
(2) pricedents
(3) precedents
(4) prisedents

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. They had been thrown**
X. upon their own exertions at an
Y. battle to fight with poverty and ignorance
Z. early age, and had a hard
(1) XZY (2) YXZ
(3) ZYX (4) XYZ

**93. The unstated assumption is**
X. conceding spatial autonomy
Y. that the grant of a different time
Z. zone is only the first temporal step towards
(1) ZXY (2) XZY
(3) YXZ (4) YZX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**My friends are going to watch a movie tonight.**

(1) A movie is going to be watched by my friends tonight.
(2) My friends will have watch a movie by tonight.
(3) A movie was going to be watched by my friends tonight.
(4) My friends will have to watch a movie by tonight.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**"What time does the flight arrive?" she asked the receptionist.**

(1) She asked the receptionist what time the flight arrived.
(2) She asked the receptionist what time the flight arrive.
(3) She asked the receptionist when does the flight arrive.
(4) She asked the receptionist what was going to be the time for the flights arrival.

**Directions (96–100) :** A passage is given with Five questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Due to poor rainfall over the past few months, the vadu mangai season is expected to be short this year. There are two distinct varieties available in the vicinity of Coimbatore. The closest to Coimbatore, and the one that appears in the markets first, is the Thadagam variety. The second and more popular variety is the one from the Thirumoorthy Hills, near Udumalpet. Representatives from commercial pickle brands whisk these mangais away in big lots directly from the wholesalers. Only a small portion of the year's harvest trickles down to the local markets.

Small vendors bring sacks full of these tiny tender mangoes to one particular street corner in Ram Nagar during the season. The corner of Rajaji Road and Sathyamurthy Road plays host to these vendors from as early as 7 : 00 am every day. Depending on the quantity they have, the mangais are available until around 11 : 00 am. If the vendors have a good day and their produce is sold quickly, they pack up and leave even as early as 9 : 00 am.

**96.** What do you think 'Thadagam' is from the passage?
(1) A Festival celebrated in Coimbatore.
(2) A variety of vadumangai mangoes.
(3) A word for 'monsoon' in the local language.
(4) A variety of mango pickle.

**97.** Why do local markets get only a small portion of the mango produce?
(1) Commercial pickle companies buy the mangoes in huge quantities.
(2) The mangoes get sold as quickly as 9 : 00 am.
(3) There are only three vendors in the local market.
(4) The sellers of the local market are just small vendors.

**98.** What may happen if there is adequate rainfall?
(1) Local vendors will get fewer mangoes.
(2) The vadu mangai season will be longer that year.
(3) Commercial pickle companies will buy in smaller quantities.
(4) Vendors will be able to sell quickly.

**99.** The more popular vadu mangai mangoes are from :
(1) Udumalpet
(2) Coimbatore
(3) Thirumoorthy Hills
(4) Ram Nagar

**100.** Which of the following best describes the vadu mangai mangoes?
(1) Big and juicy
(2) Orange but raw
(3) Tiny and tender
(4) Sour and sweet

## ANSWERS

| **1.** (2) | **2.** (4) | **3.** (1) | **4.** (4) |
|---|---|---|---|
| **5.** (2) | **6.** (4) | **7.** (2) | **8.** (1) |
| **9.** (1) | **10.** (4) | **11.** (2) | **12.** (2) |
| **13.** (3) | **14.** (4) | **15.** (4) | **16.** (3) |
| **17.** (1) | **18.** (4) | **19.** (2) | **20.** (1) |
| **21.** (2) | **22.** (2) | **23.** (1) | **24.** (1) |
| **25.** (1) | **26.** (1) | **27.** (2) | **28.** (4) |
| **29.** (1) | **30.** (2) | **31.** (4) | **32.** (4) |
| **33.** (3) | **34.** (4) | **35.** (2) | **36.** (1) |
| **37.** (4) | **38.** (2) | **39.** (2) | **40.** (1) |
| **41.** (3) | **42.** (2) | **43.** (1) | **44.** (2) |
| **45.** (4) | **46.** (3) | **47.** (4) | **48.** (2) |
| **49.** (2) | **50.** (1) | **51.** (1) | **52.** (2) |
| **53.** (4) | **54.** (2) | **55.** (1) | **56.** (2) |
| **57.** (2) | **58.** (4) | **59.** (1) | **60.** (1) |
| **61.** (3) | **62.** (3) | **63.** (4) | **64.** (1) |
| **65.** (4) | **66.** (2) | **67.** (1) | **68.** (1) |
| **69.** (3) | **70.** (3) | **71.** (3) | **72.** (1) |
| **73.** (4) | **74.** (2) | **75.** (4) | **76.** (3) |
| **77.** (4) | **78.** (1) | **79.** (3) | **80.** (3) |
| **81.** (1) | **82.** (1) | **83.** (2) | **84.** (3) |
| **85.** (4) | **86.** (2) | **87.** (2) | **88.** (2) |
| **89.** (1) | **90.** (4) | **91.** (3) | **92.** (1) |
| **93.** (4) | **94.** (1) | **95.** (1) | **96.** (2) |
| **97.** (1) | **98.** (2) | **99.** (3) | **100.** (3) |

## EXPLANATIONS

**1.** (2) Spring appears like spiral. Similarly, Bangle is a circular object.

**2.** (4)
W U V : T R S :: Q O P : N L M
(W → T: −3, U → R: −3, V → S: −3; Q → N: −3, O → L: −3, P → M: −3)

**3.** (1) 7.25 : 7.75 : : 9 : 9.5
(7.25 + 0.5 = 7.75; 9 + 0.5 = 9.5)

**4.** (4) Except 'housefly' all others are different birds.

**5.** (2) $R \xrightarrow{-1} Q \xrightarrow{+2} S$
$M \xrightarrow{-1} L \xrightarrow{+2} N$
$F \xrightarrow{-1} E \xrightarrow{+2} G$

But, $X \xrightarrow{-1} W \xrightarrow{-1} V$

**6.** (4) 700 = 7 × 10 × 10
250 = 5 × 5 × 10
350 = 7 × 5 × 10
But,
640 = 8 × 8 × 10
(All are even factors).

**7.** (2) In each next term, the position of 'O' shifts to the right by one place.
Oxygen ⇒ O is at the first position from left.
Toil ⇒ O is at the second position from left.
Arouse ⇒ O is at the third position from left.
Arson ⇒ O is at the fourth position from left.
Tenuous ⇒ O is at the fifth position from left.
Lustrous ⇒ O is at the sixth position from left.

**8.** (1)

$Z \xrightarrow{-4} V \xrightarrow{-5} Q \xrightarrow{-4} M \xrightarrow{-5} H \xrightarrow{-4} D$

$Y \xrightarrow{-4} U \xrightarrow{-5} P \xrightarrow{-4} L \xrightarrow{-5} G \xrightarrow{-4} C$

$X \xrightarrow{-4} T \xrightarrow{-5} O \xrightarrow{-4} K \xrightarrow{-5} F \xrightarrow{-4} B$

**9.** (1)

400 –200 100 [–50] 25 –12.5

÷ (–2) ÷ (–2) ÷ (–2) ÷ (–2) ÷ (–2)

**10.** (4) 29th May = Monday
Number of days from 29th May to 17th November
= 2 + 30 + 31 + 31 + 30 + 31 + 17
= 172 days
= 24 weeks + 4 days
∴ 17th November
= Monday + 4 = Friday

**11.** (2) Possible weights of combinations of boxes :
(i) 30 + 70 = 100
(ii) 30 + 60 = 90
(iii) 30 + 90 = 120
(iv) 70 + 60 = 130
(v) 70 + 90 = 160
(vi) 60 + 90 = 150
(vii) 30 + 70 + 60 = 160
(viii) 30 + 70 + 90 = 190
(ix) 30 + 60 + 90 = 180
(x) 70 + 60 + 90 = 220
(xi) 30 + 70 + 60 + 90 = 250

**12.** (2) There is no 'A' letter in the given word. Therefore, the word TEAMS cannot be formed.

[M] Y [S T I] Q U [E] ⇒ EMITS

M Y [S T I] Q [U E] ⇒ SUITE

M Y S [T I Q U E] ⇒ QUIET

**13.** (3)

| I | M | P | L | O | R | E |
|---|---|---|---|---|---|---|
| –2↓ | –2↓ | –2↓ | –2↓ | –2↓ | –2↓ | –2↓ |
| G | K | N | J | M | P | C |

Therefore,

| H | U | B |
|---|---|---|
| –2↓ | –2↓ | –2↓ |
| F | S | Z |

**14.** (4)

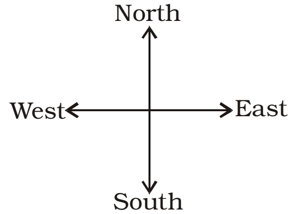
| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

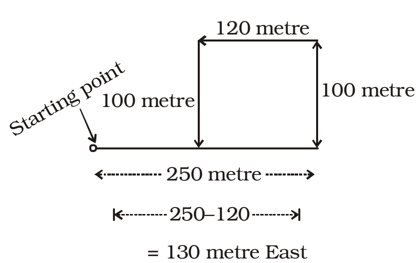
72 × 9 – 14 + 2 = ?
⇒ ? = 72 ÷ 9 + 14 × 2
⇒ ? = 8 + 28 = 36

**15.** (4) 52% 32 = (52 – 32) × 2
= 20 × 2= 40
22% 20 = (22 – 20) × 2
= 2 × 2 = 4
Therefore,
15% 11 = (15 – 11) ×2
= 4 × 2 = 8

**16.** (3) First Column
$6^3 = 216$
Second Column
$2^4 = 16$
Third Column
$7^2 = 49$

**17.** (1)



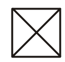
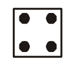

**18.** (4) First Premise is Universal Affirmative (A–type).
Second Premise is Universal Negative (E–type).

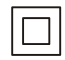
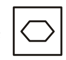
No eatables are drinks.

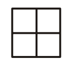
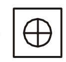
All drinks are food.

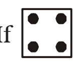
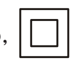
E + A ⇒ $O_1$–type of Conclusion
"Some food are not eatable."

**19.** (2) After folding the figure :

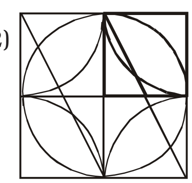
 lies opposite .

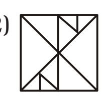
 lies opposite .

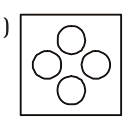
 lies opposite .

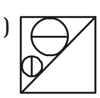
If  is on the top,  cannot be on the right side.

**20.** (1) Indians who are collectors can be represented by the letter common to the circle and the triangle. Such letter is C. Indians who are women can be represented by the letters common to the circle and the rectangle. Such letters are A and B.

**21.** (2) 

**22.** (2) 

**23.** (1) 

**24.** (1) 

**25.** (1) P = 58, 65
T = 87
L = 14
O = 55, 57

| Options | P | L | O | T |
|---|---|---|---|---|
| (1) | 58 | 14 | 57 | 87 |
| (2) | 44 | 04 | 76 | 86 |
| (3) | 03 | 23 | 86 | 69 |
| (4) | 23 | 04 | 99 | 99 |

**26.** (1) In economics, normal goods are any goods for which demand increases when income increases, and falls when income decreases but price remains constant, i.e. with a positive income elasticity of demand.

**27.** (2) Short-run marginal cost refers to the change in cost that result from a change in output when the usage of the variable factor changes. Short-run marginal cost curve cuts the average variable cost curve from below at the minimum point of average variable cost.

**28.** (4) The Concurrent List or List-III (Seventh Schedule) is a list of 52 items (though the last item is numbered 47) given in the Seventh Schedule to the Constitution of India. The legislative section is divided into three lists : Union List, State List and Concurrent List. Forests are listed under Concurrent List.

**29.** (1) Article 14 of the Indian Constitution say, "The State shall not deny to any person equality before the law or equal protection of the laws within the territory of India". The right to 'equal protection of the laws' contained in Art. 14 mean the right to equal treatment of persons in equal circumstances. It is available to citizens as well as non-citizens.

**30.** (2) Shah Jahan fell ill in 1658 and Dara Shukoh, his eldest son, assumed the role of regent due to Shah Jahan's inability to manage the court. This angered Shah Jahan's other sons who rebelled against their brother. Aurangzeb, the emperor's third son, overpowered all of his brothers and placed Shah Jahan under house arrest in Agra Fort.

**31.** (4) The British government appointed the Simon Commission in 1927for enquiry into the working of the Montagu-Chelmsford Reforms headed by Sir John Simmon. The Indian National Congress, at its December 1927 meeting in Madras, resolved to boycott the Commission and challenged Lord Birkenhead, the Secretary of State for India, to draft a constitution that would be acceptable to the Indian public.

**32.** (4) Intrusive igneous rocks crystallize below Earth's surface, and the slow cooling that occurs there allows large crystals to form. Examples of intrusive igneous rocks are diorite, gabbro, granite, pegmatite and peridotite.

**33.** (3) Duns are longitudinal valleys formed as a result of folding when Eurasian plate and Indian plate collided. They are formed between Lesser Himalayas and Shiwaliks. These valleys are deposited with coarse alluvium brought down by Himalayan rivers. Dehra Dun in Uttarakhand is the best example.

**34.** (4) Cell division, also called mitosis, occurs in all living things. Some single-celled organisms use a type of mitosis as their only form of reproduction. In multicellular organisms, cell division allows individuals to grow and change by expanding the number of total cells.

**35.** (2) The reproductive organ of plants is the flower, which is made up of many parts, including petals, carpels and stamens. Carpels and stamens comprise the sex organs of the flower; the carpal is the female part that produces the eggs and the stamen is the male part that produces the pollen.

**36.** (1) In animals where organs have associated to form functional systems where each system is concerned with a specific physiological function are said to exhibit organ system level of organisation. Example : Annelids, Arthropods, Molluscs, Echinoderms and Chordates.

**37.** (4) Contact force is a force that is applied by objects in contact with each other. Contact force acts on a point of direct contact between the two objects. This force can either be continuous as a continuous force or can be momentary in the form of an impulse. Contact force is governed by Newton's Laws.

**38.** (2) Friction or frictional force is the force that acts between two surfaces in contact. The force of friction between two surfaces will icrease if the two surfaces are pressed harder.

**39.** (2) A URL specifies the location of a target stored on a local or networked computer. The target can be a file, directory, HTML page, image, program, and so on. An absolute URL contains all the information necessary to locate a resource. A relative URL locates a resource using an absolute URL as a starting point.

**40.** (1) Physical changes occur when objects or substances undergo a change that does not change their chemical composition. This contrasts with the concept of chemical change in which the composition of a substance changes or one or more substances combine or break up to form new substances.

**41.** (3) Ductility is a physical property of a material associated with the ability to be hammered thin or stretched into wire without breaking. A ductile substance can be drawn

into a wire. Most metals are good examples of ductile materials, including gold, silver, copper, erbium, terbium, and samarium.

**42.** (2) Mortality rate is a measure of the number of deaths (in general, or due to a specific cause) in a particular population, scaled to the size of that population, per unit of time.

**43.** (1) Gram Uday Se Bharat Uday Abhiyan' (Village Self Governance Campaign) aims to generate nation-wide efforts to increase social harmony across villages, strengthen Panchayati Raj, promote rural development, and foster farmers' progress. It was launched on the occasion of 125th birth anniversary of Dr. Babasaheb Ambedkar at his birthplace at Mhow, Madhya Pradesh.

**44.** (2) William Harvey (1578-1657), the father of modern physiology, was the first researcher to discovery the circulation of blood through the body. He was also the first to suggest that humans and other mammals reproduced via the fertilisation of an egg by sperm.

**45.** (4) The 2015 Cricket World Cup was jointly hosted by Australia and New Zealand . Australia defeated New Zealand by 7 wickets to win their fifth ICC Cricket World Cup. New Zealand's semi-final was against South Africa while Australia's semi-final was against India.

**46.** (3) Buland Darwaza or the loft gateway at Fatehpur Sikri was built by the great Mughal emperor, Akbar in 1601. Akbar built the Buland Darwaza to commemorate his victory over Gujarat. It is located in the Fatehpur Sikri, in the Agra district of the Uttar Pradesh.

**47.** (4) The Padma Awards are one of the highest civilian honours of India announced annually on the eve of Republic Day. The Awards are given in three categories: Padma Vibhushan (for exceptional and distinguished service), Padma Bhushan (distinguished service of higher order) and Padma Shri (distinguished service). The award seeks to recognize achievements in all fields of activities or disciplines where an element of public service is involved.

**48.** (2) The Great Indian Novel is a satirical novel by Shashi Tharoor.

- A Foreign Policy for India is authored by I.K. Gujral
- Wings of Fire: An Autobiography by APJ Abdul Kalam

**49.** (2) Guided by the mutual will to develop friendly relations, Cuba and Morocco has signed an agreement to reestablish diplomatic ties after a time period of 37 years. Morocco severed its ties with Cuba in 1980 after Fidel Castro officially recognized Western Sahara as the independent Sahrawi Arab Democratic Republic (SADR). Morocco claims the territory as its own.

**50.** (1) Bordering China in the north and India in the south, east, and west, Nepal is the largest sovereign Himalayan state. The border between China and Nepal is 1,236 kilometres in length, along the mountain range the Himalayas, extends northwest-southeast direction, separating the south of Tibet Autonomous Region of China and the territory of Nepal.

**51.** (1) Dividing 213 by 9, remainder = 6

Required number = 213 + (9 – 6)

= 213 + 3 = 216

So, by adding 3 in 213, it is completely divisible by 9.

**52.** (2) Work done by A and B in 4

days $= 4\left(\frac{1}{12}+\frac{1}{24}\right)$

$= 4\left(\frac{2+1}{24}\right) = \frac{1}{2}$ part

Remaining part $= 1 - \frac{1}{2} = \frac{1}{2}$

**53.** (4) Area of equilateral triangle

$= \frac{\sqrt{3}}{4} \times (\text{side})^2$

$= \frac{\sqrt{3}}{4} \times (6)^2 = 9\sqrt{3}$ sq. cm.

**54.** (2) Effective discount

$= \left(x + y - \frac{xy}{100}\right)\%$

$= \left(20 + 25 - \frac{20 \times 25}{100}\right)\%$

= (45–5)% = 40%

**55.** (1) A : B : C = 5 : 7 : 8

Sum of the terms of ratio

= 5 + 7 + 8 = 20

Share of B $= \frac{7}{20} \times 12400$

= Rs. 4340

**56.** (2) Total weight of P, Q and R

= 47 × 3 = 141 kg

Total weight of P and Q

= 2 × 32.5 = 65 kg

Weight of R = 141 – 65

= 76 kg

Total weight of Q and R

= 2 × 48.5 = 97 kg

Weight of Q = 97 – 76 = 21 kg

**57.** (2) Profit per cent

$= \frac{1}{5-1} \times 100$

$= \frac{1}{4} \times 100 = 25\%$

**58.** (4) 20% of 500% of 50

$= 50 \times \frac{500}{100} \times \frac{20}{100} = 50$

**59.** (1) Average speed

$= \frac{\text{Distance}}{\text{Speed}} = \frac{90}{2.5}$ km/hr

$= \left(\frac{90}{2.5} \times \frac{5}{8}\right)$ m/sec

= 10 m/sec.

**60.** (1) Rate $= \frac{\text{S.I.} \times 100}{\text{Time} \times \text{Principal}}$

$= \frac{18 \times 100}{3 \times 100} = 6\%$ per annum

$A = P\left(1 + \frac{r}{100}\right)^n$

$= 25000\left(1 + \frac{6}{100}\right)^3$

$= 25000 \times \frac{106}{100} \times \frac{106}{100} \times \frac{106}{100}$

= Rs. 29775.4

$\therefore$ Compound Interest

= Rs. (29775.4 – 25000)

= Rs. 4775.4

**61.** (3) $5x + 6(3 - 2x) = 4$

$\Rightarrow 5x + 18 - 12x = 4$

$\Rightarrow 18 - 7x = 4$

$\Rightarrow 7x = 18 - 4 = 14$

$\Rightarrow x = \frac{14}{7} = 2$

**62.** (3) $a + b = 1$, $ab = -6$

$\therefore a^2 + b^2 = (a + b)^2 - 2ab$

$= (1)^2 - 2(-6) = 1 + 12 = 13$

$\therefore a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

$= (1)[13 - (-6)] = 13 + 6 = 19$

**63.** (4) Let the number be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$x + \frac{20}{x} = 9$

$\Rightarrow x^2 + 20 = 9x$

$\Rightarrow x^2 - 9x + 20 = 0$

$\Rightarrow x^2 - 5x - 4x + 20 = 0$

$\Rightarrow x(x - 5) - 4(x - 5) = 0$

$\Rightarrow (x - 5)(x - 4) = 0$

$\Rightarrow x = 5$ or, $x = 4$

**64.** (1) Let the first term of A.P. be $a$ and its common difference be $d$.

$\therefore a_n = a + (n - 1)d$

$\Rightarrow a + 2d = 13$ ...(i)

$a + 4d = 21$ ...(ii)

By equation (i) – (ii),

$a + 2d = 13$

$a + 4d = 21$

$-2d = -8$

$\Rightarrow d = 4$

$\therefore a + 2d = 13$

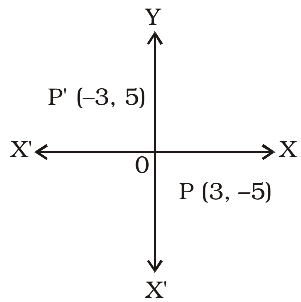
$\Rightarrow a + 8 = 13$

$\Rightarrow a = 13 - 8 = 5$

$\therefore$ 13th term $= a + 12d$

$= 5 + 12 \times 4 = 5 + 48 = 53$

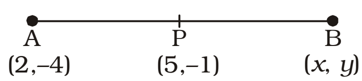
**65.** (4)




Reflection of point $(x, y)$ in origin $= (-x, -y)$

$\therefore$ Reflection of point (3, – 5) in origin = (–3, 5)

**66.** (2) Let co-ordinates of B be $(x, y)$.




The co–ordinates of the mid–point of line segment joining A $(x_1, y_1)$ and B $(x_2, y_2)$

$= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

$\therefore \frac{2 + x}{2} = 5 \Rightarrow x = 10 - 2 = 8$

and $\frac{-4 + y}{2} = -1$

$\Rightarrow y = -2 + 4 = 2$

$\therefore$ Co–ordinates of B

= (8, 2)

**67.** (1) Slope of the line passing through (–2, 3) and (2, 0)

$= \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 3}{2 - (-2)}$

$= \frac{-3}{4} = m_1$

Slope of the line perpendicular to this line $= \frac{-1}{m_1} = \frac{4}{3}$

**68.** (1) $\Delta ABC \sim \Delta PQR$

$\frac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta PQR} = \frac{AB}{PQ}$

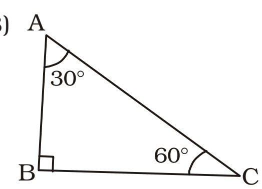
$\Rightarrow \frac{1}{2} = \frac{AB}{10}$

$\Rightarrow AB = \frac{10}{2} = 5$ cm.

**69.** (3) $\sin 30° + \cos 30°$

$= \frac{1}{2} + \frac{\sqrt{3}}{2} = \frac{1 + \sqrt{3}}{2}$

**70.** (3)




$\sec C = \sec 60° = 2$

**71.** (3) $\sin\theta = \frac{12}{3}$

$\cos\theta = \sqrt{1 - \sin^2\theta}$

$= \sqrt{1 - \left(\frac{12}{13}\right)^2} = \sqrt{1 - \frac{144}{169}}$

$= \sqrt{\frac{169 - 144}{169}} = \sqrt{\frac{25}{169}} = \frac{5}{13}$

$\cot\theta = \frac{\cos\theta}{\sin\theta} = \frac{5}{13} \times \frac{13}{12} = \frac{5}{12}$

**72.** (1) Ratio of population densities of country C to country D

$= \frac{150}{200} = \frac{3}{4} = 3 : 4$

**73.** (4) Difference in the average number of people living per 1000 sq. km in countries E and F $= \frac{400-150}{100} \times 1000$

$= 250 \times 10 = 2500$

**74.** (2) Required per cent

$= \frac{400-200}{200} \times 100$

$= \frac{200 \times 100}{200} = 100\%$

**75.** (4) Area of country B

= 2000000 sq. km.

$\therefore$ Its population

$= \frac{50}{100} \times 2000000$

= 1000000

**76.** (3) 'different' is followed by 'from', not than.

'your' is determiner. Here, we require a pronoun, *i.e.* yours.

yours – your phone

Use 'from yours' is place of 'than your'.

**78.** (1) **Pleasant (Adjective)** = cheerful, happy.

**Severe/mean/nasty (Adjective)** = terrible, awful.

**Demeanour (Noun)** = manner; attitude.

**79.** (3) **Compulsory (Adjective)** = obligatory; mandatory.

**Optional (Adjective)** = not compulsory or mandatory.

**80.** (3) **Stymie/impede (Verb)** = hinder; obstruct; interfere.

**Look at the sentence :**

Changes stymied new medical treatments.

**Explicate (Verb)** = explain; make explicit.

**Aid/abet (Verb)** = assist; help; support.

**81.** (1) **Suffix (Noun)** = a morpheme (–ion, able) added at the end of a word.

**Addition (Noun)** = something added.

**Basic/root/focal (Adjective)** = relating to the centre; chief; key.

**82.** (1) **Muggy/sultry/sticky (Adjective)** = attractive; sensual; humid; stuffy; airless.

**Look at the sentence :**

A sultry French woman.

**Frigid (Adjective)** = unresponsive; cold.

**Soggy (Adjective)** = soft and wet; musty.

**83.** (2) **Supple/pliable/flexible/bending (Adjective)** = elastic humble.

**Brittle (Adjective)** = easily breakable.

**Look at the sentence :**

Glass is brittle.

**84.** (3) **looking in the wrong place**

**Look at the sentence :**

She thinks it will solve the problem. But I think she is barking up the wrong tree.

**bark up (Verb)** = strip the bark from a tree

**85.** (4) **to declare the end of task**

**Look at the sentence :**

It is time for M.S. Dhoni to call it a day.

**86.** (2) Would you mind – is followed by $V_1$ + ing; it is a polite form of asking for something.

**Look at the sentence :**

Would you mind keeping your mouth shut ?

Would you mind cooking food for me ?

Would you mind reading this letter, please ?

**87.** (2) There is no condition in the sentence.

Simply, $V_2$ will make the sentence apt and apporpriate.

**88.** (2) **Vigour (Noun)** = strength; energy.

**Fortitude (Noun)** = courage; fearlessness.

**Clout (Noun)** = a heavy blow.

**89.** (1) **Deceit (Noun)** = deception;

**Myth (Noun)** = false belief;

**Perjury (Noun)** = lying under oath; violation of an oath.

**90.** (4) Correct spelling is : Consensus = (a general agreement)

**91.** (3) Correct spelling is : Precedents (model; exemplar).

**94.** (1) A movie is going to be watched by my friends tonight.

It is active voice of Present Continuous but with to–infinitive formation.

In such a sentence, tense remains the same. Only to–infinitive changes to 'to + be + $V_3$', *i.e.*

to watch $\rightarrow$ to be watched

**95.** (1) She asked the receptionist what time the flight arrived.

This is direct speech of an intrrogative sentence.

Its indirect speech is formed as follows :

$\Rightarrow$ Wh–family word remains there as the connector.

$\Rightarrow$ Simple Present changes to Simple Past

$\Rightarrow$ The interrogative sentence changes to the assertive sentence.

❒❒❒

# SET 33 SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 20.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Plane : Pilot :: Ship : ?
(1) Captain (2) Soldier
(3) Navy (4) Major

**2.** Select the related letters from the given alternatives :
DFI : ACF :: OQT : ?
(1) LNQ (2) MNO
(3) MOR (4) HJL

**3.** Select the related number from the given alternatives :
77 : 84 :: 121 : ?
(1) 132 (2) 144
(3) 88 (4) 212

**4.** Select the odd word from the given alternatives :
(1) Hills (2) Valleys
(3) Trees (4) Mountains

**5.** Select the odd letters from the given alternatives :
(1) IKM (2) OQS
(3) GEC (4) UWY

**6.** Select the odd number from the given alternatives :
(1) 341 (2) 342
(3) 810 (4) 405

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
nephew, anther, tenses, prunes, preens, ?
(1) teen (2) pester
(3) repent (4) return

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
K, J, L, I, M, ?
(1) G (2) H
(3) F (4) N

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :
–4, ? , 1, 3.5, 6, 8.5
(1) 2 (2) 1.5
(3) –1.5 (4) –2

**10.** Aarav's birthday is on Sunday, 12th March . On what day of the week will be Madhup's birthday in the same year if Madhup was born on 10th August?
(1) Thursday (2) Wednesday
(3) Friday (4) Saturday

**11.** The weights of 4 boxes are 20, 30, 50 and 70 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 170 (2) 160
(3) 120 (4) 150

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**FAMISHED**
(1) SHADE (2) MEDIAS
(3) MASHED (4) AMUSED

**13.** If ENCRYPT is coded as VMXIBKG, then how will ARC be coded as?
(1) PQE (2) ZIX
(3) ZSX (4) QTB

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
550 × 22 – 24 + 3 = ?
(1) 91 (2) 97
(3) 77 (4) 68

**15.** If 9 @ 7 = 4; 6 @ 1 = 10; 7 @ 4 = 6; then what is the value of 8 @ 2 = ?
(1) 1 (2) 35
(3) 26 (4) 12

**16.** Select the missing number from the given responses

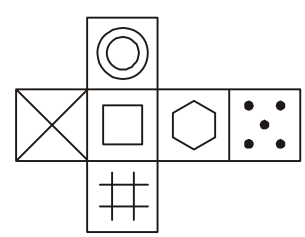
| ? | 105 | 96 |
|---|---|---|
| 13 | 15 | 12 |
| 5 | 7 | 8 |

(1) 9 (2) 201
(3) 65 (4) 101

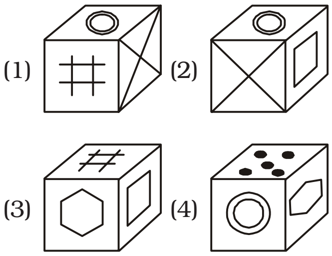
**17.** A man walks 3 km West, then turns South and walks 7 km, then turns East and walks 3 km, then turns to his right and walks 5 km. Where is he now with reference to his starting position?
(1) 12 km North
(2) 2 km South
(3) 12 km South
(4) 2 km North

**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
**Statements :**
I. Some books are diaries.
II. All books are papers.
**Conclusions :**
I. All diaries are papers.
II. Some papers are diaries.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

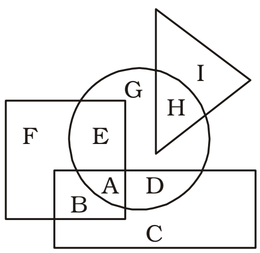
**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure ?
**Question Figure :**



**Answer Figures :**



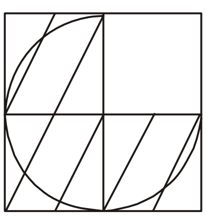
**20.** In the following figure, square represents Professors, triangle represents Workers, circle represents Dieticians and rectangle represents men. Which set of letters represents Dieticians who are not men?



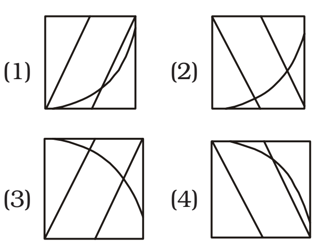

(1) A,D
(2) B,C
(3) E, G, H
(4) A, B, C, D, E, G, H

**21.** Which answer figure will complet the pattern in the question figure ?

**Question Figure :**

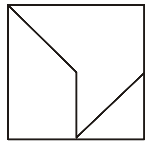


**Answer Figures :**

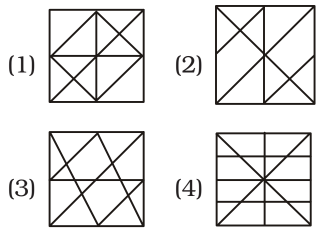


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

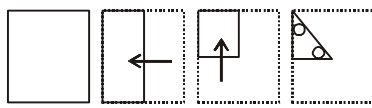


**Answer Figures :**

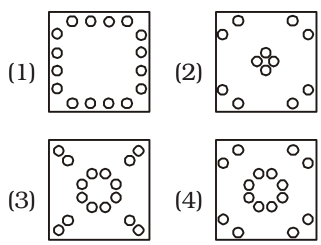


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

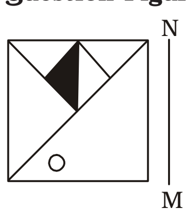


**Answer Figures :**

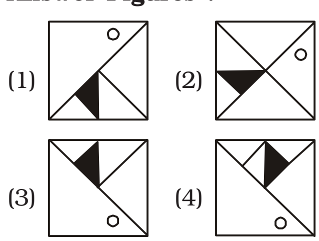


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are umbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its colum, for example 'K' can be represented by 30, 41 etc. and 'Z' can be represented by 77, 68 etc. Similarly, you have to identify the set for the word **'NEST'**.

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | D | K | D | A | K |
| 1 | I | C | E | F | D |
| 2 | H | M | G | M | F |
| 3 | K | C | G | C | B |
| 4 | G | K | A | A | J |

**Matrix-I**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | S | U | S | Y | X |
| 6 | O | P | N | Z | Q |
| 7 | S | T | Z | T | S |
| 8 | W | R | Y | R | W |
| 9 | R | R | O | U | R |

(1) 67, 12, 75, 78
(2) 12, 14, 58, 75
(3) 44, 41, 55, 78
(4) 44, 31, 79, 76

## GENERAL AWARENESS

**26.** A commodity market has a ________ structure, if there is one seller of the commodity, the commodity has no substitute, and entry into the industry by another firm is prevented.
(1) Perfect Competition
(2) Monopoly
(3) Oligopoly
(4) Monopolistic Competition

**27.** The short run average cost curve is ____ shaped.
(1) U (2) V
(3) X (4) W

**28.** "Foreign jurisdiction" is listed in the _________ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** Which Fundamental Right in the Indian Constitution includes abolition of untouchability?
(1) Right to Liberty and Personal Freedom
(2) Right to Freedom of Religion
(3) Right to Equality
(4) Cultural and Educational Rights

**30.** ________, succeeded to the throne of Ferghana in 1494 when he was only 12 years old.
(1) Humayun (2) Akbar
(3) Jahangir (4) Babur

**31.** Name the British General who was responsible for the Jallianwalla Bagh massacre.
(1) Hastings (2) Cornwallis
(3) Dyer (4) Dalhousie

**32.** ________ influences the rate of weathering and humus in soil formation.
(1) Flora & Fauna
(2) Time
(3) Parent rock
(4) Climate

**33.** The longitudes of main land of India extends between
(1) 68° 7' E and 97° 25' E
(2) 68° 7' W and 97° 25' W
(3) 68° 7' N and 97° 25' N
(4) 68° 7' S and 97° 25' S

**34.** A healthy adult man has, on an average, ______ (in millions) of RBCs mm-3 of blood.
(1) 5 – 5.5 (2) 4 – 4.5
(3) 3 – 3.5 (4) 6 – 6.5

**35.** The female sex organs in a flower is the _________.
(1) Zoospores
(2) stamen
(3) pistil
(4) Chlorophyceae

**36.** Animals in which the cells are arranged in two embryonic layers are called _______.
(1) Diploblastic
(2) Extoderm
(3) Tripoblastic
(4) Endoderm

**37.** An image formed by a plane mirror, that cannot be obtained on a screen is called
(1) Virtual image
(2) Real image
(3) Inverted image
(4) Erect image

**38.** The force exerted by a magnet is an example of ________.
(1) Non-contact force
(2) Muscular force
(3) Contact force
(4) Electrostatic force

**39.** A __________ is a collection of letters, digits, punctuation characters, and so on.
(1) Numbers
(2) String
(3) Arrays
(4) Boolean Values

**40.** A change in which a substance undergoes a change in its physical properties is called
(1) Chemical Properties
(2) Physical Properties
(3) Chemical Change
(4) Physical Change

**41.** The process of depositing a layer of zinc on iron is called
(1) Galvanisation
(2) Crystallisation
(3) Rusting
(4) Baking

**42.** _____ is the most ecologically relevant environmental factor.
(1) Water
(2) Temperature
(3) Light
(4) Soil

**43.** ______ project is an ambitious Union Government Project which integrates the efforts to clean and protect the Ganga river in a comprehensive manner.
(1) Uday Desh Ka Aam Nagrik
(2) Urja Ganga
(3) Ek Bharat Shrestha Bharat
(4) Namami Ganga Yojana

**44.** Who discovered Antarctica?
(1) James Cook
(2) Friedrich Miescher
(3) George Crum
(4) Christopher Columbus

**45.** The final of 2014 FIFA Men's World Cup was played between which of the following countries?
(1) France and Argentina
(2) Germany and France
(3) Germany and Argentina
(4) Italy and Germany

**46.** Bikaner school, Jaipur school, Marwar school, Mewar school are all schools of?
(1) Miniature paintings
(2) Rajputpa intings
(3) Madhubani paintings
(4) Cave paintings

**47.** Which film won the award for Best Film at the 61st Filmfare Award held in 2016?
(1) Tubelight
(2) Sultan
(3) Bajirao Mastani
(4) Badlapur

**48.** Which of the statements given below are correct?
1. The author of 'My Country My Life' is L.K Advani.
2. 'Wings of Fire' is an Autobiography of Subhash Chandra.
3. The author of 'The Great Indian Novel' is Shashi Tharoor.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** IMF has predicted that the global economy would grow at ______ % in 2017.
(1) 5.5 (2) 4.5
(3) 3.5 (4) 2.5

**50.** Citizen of which neighbouring country does not require a passport or visa to enter India?
(1) Pakistan (2) Bangladesh
(3) Nepal (4) China

## QUANTITATIVE APTITUDE

**51.** What is the HCF of 6345 and 2160?
(1) 45 (2) 135
(3) 270 (4) 15

**52.** A can do a work in 24 days and B in 40 days. If they work on it together for 10 days, then what fraction of work is left?
(1) $\frac{1}{2}$ (2) $\frac{1}{3}$
(3) $\frac{2}{3}$ (4) $\frac{3}{4}$

**53.** What is the circumference (in cm.) of a circle whose area is 616 sq. cm.?
(1) 44 (2) 66
(3) 22 (4) 88

**54.** If a retailer offers a discount of 20% on the marked price of his goods and thus ends up selling at cost price, what was the percentage mark up?
(1) 20 (2) 25
(3) 30 (4) 40

**55.** In an MBA selection process, the ratio of selected to unselected candidates was 11 : 2. If 40 less candidates had applied and 20 less selected, the ratio of selected to unselected candidates would have been 10 : 1. How many candidates had applied for the process?
(1) 220 (2) 260
(3) 300 (4) 340

**56.** What is the average of all natural numbers from 21 to 39?
(1) 30 (2) 31
(3) 29 (4) 28

**57.** A farmer buys a goat and a sheep for Rs. 3500. He sold the sheep at a profit of 20 per cent and the goat at a loss of 10 per cent. If he sold both the animals at the same price, then the cost price (in Rs.) of the cheaper animal was
(1) 2000 (2) 1500
(3) 1750 (4) 2250

**58.** Two numbers are 10% and 20% less than a third number respectively. By how much per cent should the second number be enhanced to make it equal to the first number?
(1) 10 (2) 15
(3) 12.5 (4) 8

**59.** Two cars A and B travel from one city to another, at speeds of 35 km/hr and 45 km/hr respectively. If car B takes 2 hours less time than car A for the journey, then the distance (in kms.) between the two cities is
(1) 345 (2) 375
(3) 415 (4) 315

**60.** At what rate of compound interest (in %) per annum will a sum of Rs. 15,000 become Rs. 18,150 in 2 years?
(1) 11 (2) 10
(3) 9 (4) 12

**61.** If $9x-\left[\frac{5(2x+1)}{2}\right]=\frac{9}{2}$, then the value of $x$ is
(1) $\frac{7}{4}$ (2) $-\frac{7}{4}$
(3) $\frac{4}{7}$ (4) $-\frac{4}{7}$

**62.** If $a + b = 4$ and $ab = -21$, then what is the value of $(a^3 + b^3)$ ?
(1) 370 (2) 158
(3) 185 (4) 316

**63.** The sum of a fraction and 10 times its reciprocal is $\frac{37}{4}$. What is the fraction?
(1) $\frac{5}{4}$ (2) $\frac{4}{5}$
(3) $\frac{3}{4}$ (4) $\frac{4}{3}$

**64.** The 2nd and 6th term of an arithmetic progression are 8 and 20 respectively. What is the 20th term?
(1) 56 (2) 65
(3) 62 (4) 59

**65.** What is the reflection of the point (3, 2) in the line $y = -2$?
(1) (–7, 2) (2) (–3, –6)
(3) (–7, –2) (4) (3, –6)

**66.** What is the distance between the points (3, 6) and (–2, –6)?
(1) 15 (2) 13
(3) 11 (4) 12

**67.** What is the equation of a line which has 3 as $x$-intercept and –5 as $y$-intercept?
(1) $3x - 5y = 15$
(2) $5x - 3y = 15$
(3) $5x + 3y = 15$
(4) $3x + 5y = 15$

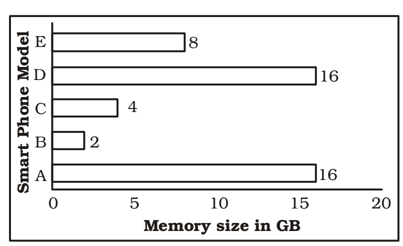
**68.** $\Delta$ABC is right angled at B. BD is an altitude. DC = 9 cm and AC = 25 cm. What is the value of BC (in cm.)?
(1) 12 (2) 18
(3) 16 (4) 15

**69.** What is the value of $\tan 45^\circ - \frac{1}{\sqrt{3}}\sec 60^\circ$ ?
(1) $\frac{\left(1-2\sqrt{3}\right)}{2}$ (2) $\frac{\left(\sqrt{2}-\sqrt{3}\right)}{\sqrt{6}}$
(3) $\frac{\left(3-2\sqrt{3}\right)}{3}$ (4) $\frac{\left(1-2\sqrt{2}\right)}{2}$

**70.** $\Delta$DEF is right angled at E. If m$\angle$D = 30°, what is the length of DE (in cm), if EF $=6\sqrt{3}$ cm.?
(1) 18 (2) $12\sqrt{3}$
(3) $18\sqrt{3}$ (4) 12

**71.** If $\sin\theta = \frac{20}{29}$, then what is the value of $\sec\theta$ ?
(1) $\frac{29}{21}$ (2) $\frac{29}{20}$
(3) $\frac{21}{20}$ (4) $\frac{21}{29}$

**Directions (72–75) :** The bar graph shows the internal memory size of 5 different smartphone models (A, B, C, D and E). Study the diagram and answer the following questions.



**72.** Which two models have the same memory size?
(1) E and C (2) B and D
(3) D and A (4) A and E

**73.** Even if memory of model C was doubled it would be lesser (in GB) than that of model A by
(1) 8 (2) 12
(3) 4 (4) 16

**74.** Even if memory of model D was halved it would be greater (in %) than that of model B by
(1) 300 (2) 400
(3) 75 (4) 50

**75.** If price of model E is increased by Rs. 12,000 and its memory is doubled the sales remain unchanged. This implies that people are willing to pay Rs. ______ per extra GB of memory space.
(1) 1200 (2) 1500
(3) 1000 (4) 800

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** My sister had a tough time (1)/ removing the chewing gum that (2)/ stuck with her hair. (3)/ No Error (4)

**77.** The Captain along with (1)/ his team has been (2)/ invited to the function. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Common adverse __________ of this medication include, bleeding, nausea and vomiting.
(1) affects (2) effect
(3) effects (4) affect

**79.** _________ to my political rival's statement, the data reveals crime has not increased in this country.
(1) Accepting (2) Contrary
(3) Reference (4) Assisting

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Ravine**
(1) Lucid (2) Patent
(3) Abyss (4) Palpable

**81. Realm**
(1) Vault (2) Azure
(3) Lid (4) Dimension

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Rebuff**
(1) Rebuke (2) Snub
(3) Nix (4) Praise

**83. Recede**
(1) Ebb (2) Fade
(3) Extend (4) Wane

**Directions (84–85) :** In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Ball is in your court**
(1) Put the blame on the other person.
(2) Request someone to return your belonging.
(3) It is up to you to make the next decision or step.
(4) To tell someone politely about his/her mistake.

**85. Best of both worlds**
(1) Two best teams compete with each other.
(2) A situation wherein someone has the privilege of enjoying two different opportunities.
(3) Gods who rule heaven and earth.
(4) A person who is respected even by his enemies.

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** The shoes were very expensive; I couldn't afford **(to buying)** them.
(1) buying
(2) to buy
(3) bought
(4) No Improvement

**87.** After they **(had finished)** eating they went for a walk.
(1) No Improvement
(2) have finished
(3) finish
(4) will finish

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88.** Interrupt **(a public speaker)** with derisive or aggressive comments or abuse
(1) Heckle (2) Soothe
(3) Allay (4) Dulcify

**89. Not being what it purports to be**
(1) Legitimate
(2) Palpable
(3) Evident
(4) Spurious

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) castegated
(2) castigatad
(3) castigated
(4) casttigated

**91.** (1) poseses
(2) posesses
(3) possesses
(4) posseses

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. The room which yielded so**
X. the fourth floor of a
Y. boarding-house in Bleecker Street
Z. much satisfaction to the two boys was on
(1) XZY (2) YXZ
(3) ZXY (4) ZYX

**93. By the time government**
X. offices or educational institutions
Y. open, many daylight
Z. hours are already lost

(1) YZX (2) ZXY
(3) XYZ (4) XZY

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**Sarla changed the curtains.**

(1) Sarla changes the curtains.
(2) The curtains were changed by Sarla.
(3) The curtain was changed by Sarla.
(4) Sarla was the one by whom the curtains were changed.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**My father said to the stranger, "Where do you live?"**

(1) My father asked the stranger where he lives.
(2) My father asked the stranger where he has been living.
(3) My father asked where he lives to the stranger.
(4) My father asked the stranger where he lived.

**Directions (96–97) :** A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

My coat's pretty warm, even though it cost £9.99 and came from the flea market. It had a label in it, CHRISTIN BIOR, but I cut it out as soon as I got home. You can't work where I work and have CHRISTIN BIOR in your coat. You could have a genuine vintage Christian Dior label. Or something Japanese. Or may be no label because you make your clothes yourself out of retro fabrics that you source at Alfies Antiques. But not CHRISTIN BIOR.

As I get near Catford Bridge, I start to feel a knot of tension. I really don't want to be late today. My boss has started throwing all sorts of hissy fits about people "swanning in at all times," so I left an extra twenty minutes early, in case it was a bad day. I can already see : It's a god-awful day. They've been having a lot of problems on our line recently and keep cancelling trains with no warning. Trouble is, in London rush hour, you can't just cancel trains. What are all the people who were planning to get on that train supposed to do? Evaporate?

**96.** What aspect of the coat she wanted to hide?
(1) That it was too warm.
(2) That it was a cheap copy.
(3) That it was expensive.
(4) That it was from a luxury market.

**97.** The author would prefer to be seen wearing all of the following types of clothes, except
(1) Those with the Christian Dior label.
(2) Any Japanese brand.
(3) Clothes stitched by herself.
(4) Those with the CHRISTIN BIOR label.

**98.** Why is her boss angry?
(1) Because he has started suffering from fits.
(2) Because it is a bad day.
(3) Because she was late the day before.
(4) Because employees are coming late to work.

**99.** What has been the problem with London trains lately?
(1) The trains have become awful.
(2) There are more trains during rush hour.
(3) People are late to work because of train delays.
(4) Trains are cancelled without prior intimation.

**100.** Which of the following situations creates a 'bad day' for the author?
(1) Being caught wearing a cheap brand coat.
(2) Cancelled trains during London rush hour.
(3) When other employees are on time but she is late.
(4) Having to spend money on expensive clothes.

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (1) | **3.** (1) | **4.** (3) |
| **5.** (3) | **6.** (1) | **7.** (4) | **8.** (2) |
| **9.** (3) | **10.** (1) | **11.** (2) | **12.** (4) |
| **13.** (2) | **14.** (2) | **15.** (4) | **16.** (3) |
| **17.** (3) | **18.** (2) | **19.** (1) | **20.** (3) |
| **21.** (3) | **22.** (2) | **23.** (4) | **24.** (4) |
| **25.** (1) | **26.** (2) | **27.** (1) | **28.** (1) |
| **29.** (3) | **30.** (4) | **31.** (3) | **32.** (4) |
| **33.** (1) | **34.** (1) | **35.** (3) | **36.** (1) |
| **37.** (1) | **38.** (1) | **39.** (2) | **40.** (2) |
| **41.** (1) | **42.** (2) | **43.** (4) | **44.** (1) |
| **45.** (3) | **46.** (2) | **47.** (3) | **48.** (3) |
| **49.** (3) | **50.** (3) | **51.** (2) | **52.** (2) |
| **53.** (4) | **54.** (2) | **55.** (2) | **56.** (1) |
| **57.** (2) | **58.** (3) | **59.** (4) | **60.** (2) |
| **61.** (1) | **62.** (4) | **63.** (1) | **64.** (3) |
| **65.** (4) | **66.** (2) | **67.** (2) | **68.** (4) |
| **69.** (3) | **70.** (1) | **71.** (1) | **72.** (3) |
| **73.** (1) | **74.** (1) | **75.** (2) | **76.** (3) |
| **77.** (4) | **78.** (3) | **79.** (2) | **80.** (3) |
| **81.** (4) | **82.** (4) | **83.** (3) | **84.** (3) |
| **85.** (2) | **86.** (2) | **87.** (1) | **88.** (1) |
| **89.** (4) | **90.** (3) | **91.** (3) | **92.** (3) |
| **93.** (3) | **94.** (2) | **95.** (4) | **96.** (2) |
| **97.** (4) | **98.** (4) | **99.** (4) | **100.** (2) |

## EXPLANATIONS

**1.** (1) A pilot is a person who controls the flight of a plane. Similarly, a captain is a person who controls the sailing of a ship.

**2.** (1)

D F I : A C F : : O Q T : L N Q

(D –3 → A, F –3 → C, I –3 → F; O –3 → L, Q –3 → N, T –3 → Q)

**3.** (1) $7 \times 11 = 77 : 7 \times (11 + 1) = 84$
Similarly,
$11 \times 11 = 121 : 11 \times (11 + 1) = 132$

**4.** (3) Except 'trees' all others are elevated or low lands.

**5.** (3) $I \xrightarrow{+2} K \xrightarrow{+2} M$
$O \xrightarrow{+2} Q \xrightarrow{+2} S$
$U \xrightarrow{+2} W \xrightarrow{+2} Y$
But,
$G \xrightarrow{-2} E \xrightarrow{-2} C$

**6.** (1) $3 + 4 + 1 = 8 = (2)^3$
$3 + 4 + 2 = 9 = (3)^2$
$8 + 1 + 0 = 9 = (3)^2$
$4 + 0 + 5 = 9 = (3)^2$

**7.** (4) All the words consist of six letters. There are two '*es*' and one '*e*' in the alternate words.

**8.** (2)

K J L I M [H]

(J → I: −1; I → H: −1; K → L: +1; L → M: +1)

**9.** (3)

−4, [−1.5,] 1, 3.5, 6, 8.5

(+2.5 +2.5 +2.5 +2.5 +2.5)

**10.** (1) 12th March = Sunday
Number of days from 12th March to 10th August.
= 19 + 30 + 31 + 30 + 31 + 10
= 151 days
= 21 weeks + 4 days
∴ 10th August = Sunday + 4
= Thursday

**11.** (2) Possible weights of combinations of boxes :
(i) 20 + 30 = 50
(ii) 20 + 50 = 70
(iii) 20 + 70 = 90
(iv) 30 + 50 = 80
(v) 30 + 70 = 100
(vi) 50 + 70 = 120
(vii) 20 + 30 + 50 = 100
(viii) 20 + 30 + 70 = 120
(ix) 20 + 50 + 70 = 140
(x) 30 + 50 + 70 = 150
(xi) 20 + 30 + 50 + 70 = 170

**12.** (4) There is no 'U' letter in the given word. Therefore, the word AMUSED cannot be formed.

F [A] M I [S H E D] ⇒ SHADE

F [A M I S] H [E D] ⇒ MEDIAS

F [A M] I [S H E D] ⇒ MASHED

**13.** (2)

| E | N | C | R | Y | P | T |
|---|---|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| V | M | X | I | B | K | G |

Opposite pairs of letters.
Therefore,

| A | R | C |
|---|---|---|
| ↓ | ↓ | ↓ |
| Z | I | X |

**14.** (2)

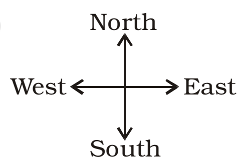
| + ⇒ × | − ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ − |

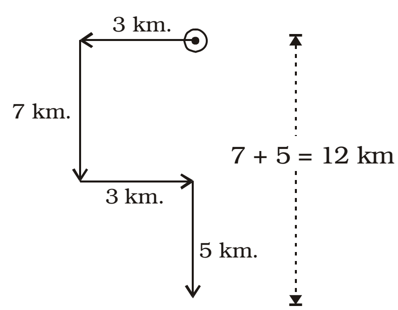
550 × 22 − 24 + 3 = ?
⇒ ? = 550 ÷ 22 + 24 × 3
⇒ ? = 25 + 72 = 97

**15.** (4) 9 @ 7 = (9 − 7) × 2
= 2 × 2 = 4
6 @ 1 = (6 − 1) × 2
= 5 × 2 = 10
7 @ 4 = (7 − 4) × 2
= 3 × 2 = 6
Therefore,
8 @ 2 = (8 − 2) × 2
= 6 × 2 = 12

**16.** (3) In each column, First Number = Second Number × Third Number
Second Column
105 = 15 × 7
Third Column
96 = 12 × 8
First Column
? = 13 × 5
⇒ ? = 65

**17.** (3)




Now, he is 12 km south to his starting position.

**18.** (2) First Premise is Particular Affirmative (I-type).
Second Premise is Universal Affirmative (A-type).

Some diaries are books.
↕
All books are papers.

I + A ⇒ I-type of Conclusion "Some diaries are papers".
Conclusion II is the Converse of it.

**19.** (1) After folding the figure :

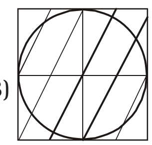
◎ lies opposite [#].

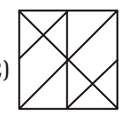
⊠ lies opposite [⬡].

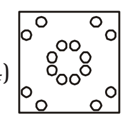
□ lies opposite [⁙].

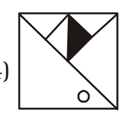
◎ cannot be on the face adjacent to [#]. Therefore, the cube given in the option (1) can not be formed.

**20.** (3) Dieticians who are not men can be represented by the letters present in the circle but outside the rectangle. Such letters are E, G and H.

**21.** (3) 

**22.** (2) 

**23.** (4) 

**24.** (4) 

**25.** (1) N = 67
E = 12
S = 55, 57, 75, 79
T = 76, 78

| Option | N | E | S | T |
|---|---|---|---|---|
| (1) | 67 | 12 | 75 | 78 |
| (2) | ~~12~~ | ~~14~~ | ~~58~~ | ~~75~~ |
| (3) | ~~44~~ | ~~41~~ | 55 | 78 |
| (4) | ~~44~~ | ~~31~~ | 79 | 76 |

**26.** (2) Monopoly is market structure characterized by a single seller, selling a unique product in the market. In a monopoly market, the seller faces no competition, as he is the sole seller of goods with no close substitute. In a monopoly market, factors like government license, ownership of resources, copyright and patent and

high starting cost make an entity a single seller of goods. All these factors restrict the entry of other sellers in the market.

**27.** (1) The nature of short period Average Cost Curve is 'U' shaped. The Average Costs are high at low levels of output because both the Average Fixed Costs and Average Variable Costs are more. But, as the level of output increases, the Average Costs fall more sharply due to the combined effect of the declining average fixed and Average Variable Costs.

**28.** (1) The Union List or List-I is a list of 100 items (the last item is numbered 97) given in Seventh Schedule in the Constitution of India on which Parliament has exclusive power to legislate. The legislative section is divided into three lists : Union List, State List and Concurrent List. Foreign jurisdiction is listed under Union.

**29.** (3) The Right to Equality has been guaranteed by the Indian Constitution in Articles 14-18. Art. 17 of Indian Constitution declare the abolition of untouchability and prohibit its practice in any form. The enforcement men disability arising out of 'Untouchability' shall be an offence punishable in accordance with law.

**30.** (4) The Mughal Empire in India was founded by Babar, a Chughtai Turk. He succeeded to the throne of Farghana, a small state in Central Asia, when his father Umar Sheikh Mirza died. At that time he was barely eleven years old. He was invited to India by Rana Sanga and Daulat Khan Lodi, the Muslim Governor of Punjab, to fight against Ibrahim Lodi.

**31.** (3) General Dyer was an officer of the British Indian Army who, as a temporary brigadier general, was responsible for the Jallianwala Bagh massacre in Amritsar.

**32.** (4) Climate is an important factor in soil formation. Temperature and precipitation influence the speed of weathering of parent materials and thus soil properties such as mineral composition and organic matter content. Temperature directly influences the speed of chemical reactions. The warmer the temperature, the faster reactions occur.

**33.** (1) India is situated north of the equator between 8°44' to 37°6' north latitude and 68°7' to 97°25' east longitude.

**34.** (1) The red blood cell (RBC) count is used to measure the number of oxygen-carrying blood cells in a volume of blood. The normal RBC reference range for women is 4.2 to 5.4 million/mcL; for men, 4.7 to 6.1 million/mcL; for children, 4.1 to 5.5 million/mcL.

**35.** (3) The reproductive organs of a plant are inside the flower. The stamens are the male reproductive organs of the flower. The stamens produce pollen. The carpel is the female reproductive organ of the flower. The carpel includes the stigma and the ovary. The ovary produces ovules.

**36.** (1) In dipoblastic Body wall develops from two embryonic germ layers- ectoderm and endoderms and persists as such in adult. Non- cellular, gelatinous mesogloea is present in between ectoderm and endoderm. Coelom is absent, e.g. Hydra (coelenterates), sponges (Porifera).

**37.** (1) A virtual image is produced when rays of light reach our eyes that appear to come from a real object, but there is in fact no object at the apparent source of the light. The most common example is when light from an object strikes a simple plane mirror. The reflected rays appear to come from an identical object that is located behind the mirror.

**38.** (1) A non-contact force is a force applied to an object by another body that is not in direct contact with it. Non-contact forces come into play when objects do not have physical contact between them or when a force is applied without any interaction. Magnetic fields are non contact forces as they push or pull objects without touching them. They exhibit these properties just on a few magnetic materials not on all.

**39.** (2) In computer programming, a string is traditionally a sequence of characters, either as a literal constant or as some kind of variable. A string is generally understood as a data type and is often implemented as an array data structure of bytes (or words) that stores a sequence of elements, typically characters, using some character encoding.

**40.** (2) Physical changes are the changes that change the physical traits of the substance, without making any change in their internal structure. On the other hand, a chemical change is one that affects the internal structure of the substance, so as to form a new substance.

**41.** (1) Galvanisation is the process of applying a protective zinc coating to iron or steel, to prevent rusting. The galvanising process creates a durable, abrasion-resistant coating of metallic zinc and zinc-iron alloy layers which are bonded metallurgically to the steel and completely covers the item.

**42.** (2) Temperature is the most ecologically relevant environmental factor. A few organisms can tolerate and thrive in a wide range of temperatures (they are calledeurythermal), but, a vast majority of them are restricted to a narrow range of temperatures (such organisms are called stenothermal).

**43.** (4) The Namami Ganga Yojana aims to clean and protect the Ganga River. Namami Ganga Yojana is an ambitious Union Government Project which in-

tegrates the efforts to clean and protect the Ganga River in a comprehensive manner. Prime focus will be on involving people living on the river's banks in this project and will cover 8 states, 47 towns & 12 rivers under the project.

**44.** (1) In 1773 Captain James Cook became the first modern explorer known to have breached the Antarctic Circle and reached the ice barrier. The Antarctic continent, located in the Earth's southern hemisphere, is centered asymmetrically around the South Pole and largely south of the Antarctic Circle.

**45.** (3) The 2014 FIFA World Cup took place in Brazil. In the final, Germany defeated Argentina to win the tournament and secure the country's fourth world title, the first after the German reunification in 1990, when as West Germany they also beat Argentina in the World Cup final.

**46.** (2) Rajasthani School of Paintings covers the areas of Mewar (later Udaipur), Jaipur, Bundi, Kota. Kishangarh, Jodhpur, Bikaner etc. Rajput paintings of India were also done on the walls of palaces, inner chambers of the forts, havelis, etc. Colors used for the painting were derived from minerals, plant sources, conch shells, precious stones, gold and silver, etc.

**47.** (3) The 61st Filmfare Awards were held to honor the best films of 2015 in Mumbai. Bajirao Mastani won the most awards with nine including Best Film.

**48.** (3) My Country My Life is an autobiographical book by L. K. Advani.

- Wings of Fire : An Autobiography by APJ Abdul Kalam, former President of India
- The Great Indian Novel is a satirical novel by Shashi Tharoor.

**49.** (3) The IMF has predicted that the global economy would grow at 3.5% in 2017, up from 3.1 % last year, and 3.6% in 2018. IMF came into existence on December 27, 1945. The IMF works to improve the economies of its member countries.

**50.** (3) Under Article 7 of the Treaty of Peace and Friendship between the government of India and the government of Nepal signed in Kathmandu on July 31, 1950; Nepalese citizens can enter India from Nepal without visa. This gives them free access across the India/Nepal border. They must however have valid identification.

**51.** (2) HCF of 6345 and 2160 :

```
2160) 6345 (2
      4320
      2025) 2160 (1
            2025
             135) 2025 (15
                  135
                   675
                   675
                    ×
```

$\therefore$ Required HCF = 135

**52.** (2) (A and B)'s 10 day's work

$= 10\left(\frac{1}{24}+\frac{1}{40}\right)$

$= 10\left(\frac{5+3}{120}\right) = \frac{8}{12} = \frac{2}{3}$

Remaining part of work

$= 1 - \frac{2}{3} = \frac{1}{3}$

**53.** (4) Area of circle = 616 cm.$^2$

$\therefore \pi r^2 = 616$

$\Rightarrow \frac{22}{7} \times r^2 = 616$

$\Rightarrow r^2 = \frac{616\times 7}{22} = 196$

$\Rightarrow r = \sqrt{196} = 14$ cm.

$\therefore$ Circumference of circle $= 2\pi r$

$= 2 \times \frac{22}{7} \times 14 = 88$ cm.

**54.** (2) Let marked price of article be Rs. $x$ and its cost price be Rs. 100.

$\therefore$ Selling price = 80% of $x$

= Rs. $\left(\frac{80x}{100}\right)$

According to the question,

$\frac{4x}{5} = 100$

$\Rightarrow x = \frac{100\times 5}{4}$ = Rs. 125

$\therefore$ Required per cent

= 125 – 100 = 25%

**55.** (2) Let total candidates be $13x$

Selected candidates = $11x$

Unselected candidates = $2x$

According to the question,

$\frac{11x-20}{(13x-40)-(11x-20)} = 10$

$\Rightarrow \frac{11x-20}{13x-40-11x+20} = 10$

$\Rightarrow \frac{11x-20}{2x-20} = 10$

$\Rightarrow 20x - 200 = 11x - 20$

$\Rightarrow 20x - 11x = 200 - 20$

$\Rightarrow 9x = 180$

$\Rightarrow x = \frac{180}{9} = 20$

$\therefore$ Total number of candidates

$= 13x = 13 \times 20 = 260$

**56.** (1) 21, 22, ..... 39

$t_n = a + (n + 1)\ d$

$\Rightarrow 39 = 21 + (n - 1)\ 1$

$\Rightarrow n - 1 = 39 - 21 = 18$

$\Rightarrow n = 18 + 1 = 19$

$\therefore S_n = \frac{n}{2}\ [a + t_n]$

$= \frac{19}{2}\ [21 + 39]$

$= \frac{19\times 60}{2} = 19 \times 30$

Required average $= \frac{19\times 30}{19}$

= 30

**57.** (2) Let the cost price of a sheep be Rs. $x$.

Cost price of a goat

= Rs. $(3500 - x)$

According to the question,

120% of $x$ = 90% of $(3500 - x)$

$\Rightarrow \frac{x\times 120}{100} = \frac{(3500-x)\ 90}{100}$

$\Rightarrow 12x = 3500 \times 9 - 9x$

$\Rightarrow 21x = 3500 \times 9$

$\Rightarrow x = \frac{3500\times 9}{21}$ = Rs. 1500

**58.** (3) Let third number be 100.

$\therefore$ First number = 90, Second number = 80

Difference = 90 – 80 = 10

Per cent increase in second number to make it equal to first number = $\frac{10}{80} \times 100$

= 12.5%

**59.** (4) Let distance between two cities be $x$ km.

According to the question,

$\Rightarrow \frac{x}{35} - \frac{x}{45} = 2$

$\Rightarrow \frac{45x - 35x}{35 \times 45} = 2$

$\Rightarrow 10x = 2 \times 35 \times 45$

$\Rightarrow x = \frac{2 \times 35 \times 45}{10} = 315$ km.

**60.** (2) $A = P\left(1 + \frac{r}{100}\right)^n$

$\Rightarrow 18150 = 15000\left(1 + \frac{r}{100}\right)^2$

$\Rightarrow \frac{18150}{15000} = \left(1 + \frac{r}{100}\right)^2$

$\Rightarrow \frac{121}{100} = \left(1 + \frac{r}{100}\right)^2$

$\Rightarrow \left(\frac{11}{10}\right)^2 = \left(1 + \frac{r}{100}\right)^2$

$\Rightarrow 1 + \frac{r}{100} = \frac{11}{10}$

$\Rightarrow \frac{r}{100} = \frac{11}{10} - 1 = \frac{1}{10}$

$\Rightarrow r = \frac{100}{10} = 10\%$

**61.** (1) $9x - \left[\frac{5\,(2x+1)}{2}\right] = \frac{9}{2}$

$\frac{18x - 10x - 5}{2} = \frac{9}{2}$

$\Rightarrow 8x - 5 = 9$

$\Rightarrow 8x = 5 + 9$

$\Rightarrow x = \frac{14}{8} = \frac{7}{4}$

**62.** (4) $a + b = 4;\ ab = -21$

$\therefore\ a^2 + b^2 = (a+b)^2 - 2ab$

$= (4)^2 - 2(-21)$

$= 16 + 42 = 58$

$\therefore\ a^3 + b^3 = (a+b)(a^2 + b^2 - ab)$

$= (4)[58 - (-21)]$

$= 4[58 + 21]$

$= 4 \times 79 = 316$

**63.** (1) Let the fraction be $x$.

$\therefore$ Its reciprocal = $\frac{1}{x}$

According to the question,

$x + \frac{10}{x} = \frac{37}{4}$

$\Rightarrow \frac{x^2 + 10}{x} = \frac{37}{4}$

$\Rightarrow 4x^2 - 37x + 40 = 0$

$\Rightarrow 4x^2 - 32x - 5x + 40 = 0$

$\Rightarrow 4x(x - 8) - 5(x - 8) = 0$

$\Rightarrow (x - 8)(4x - 5) = 0$

$\Rightarrow x = 8$ or $x = \frac{5}{4}$

**64.** (3) Let first term of A.P. = $a$, common difference = $d$

$\because\ t_n = a + (n+1)d$

$\therefore\ a + d = 8$ ...(i)

$a + 5d = 20$ ...(ii)

By equation (i) – (ii),

$a + d = 8$

$a + 5d = 20$

$-\ \ -\ \ \ \ -$

$-4d = -12$

$\Rightarrow d = \frac{12}{4} = 3$

From equation (i),

$a = 8 - d = 8 - 3 = 5$

$\therefore\ t_{20} = a + 19d = 5 + 19 \times 3$

$= 5 + 57 = 62$

**65.** (4) Reflection $(h, k)$ of point $(x_1, y_1) = (3, 2)$ in the line $y = -2$ :

$k - y = -2\,(y_1 - y)$

$\Rightarrow k - 2 = -2\,(2 + 2)$

$\Rightarrow k - 2 = -8 \Rightarrow k = -8 + 2 = -6$

$\therefore$ Reflection = (3, –6)

**66.** (2) Distance between point (3, 6) and (–2, –6)

$= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(-2-3)^2 + (-6-6)^2}$

$= \sqrt{(-5)^2 + (-12)^2}$

$= \sqrt{25 + 144} = \sqrt{169} = 13$

**67.** (2) $\because \frac{x}{a} + \frac{y}{b} = 1$

Where $a$ = $x$–intercept, $b$ = $y$–intercept

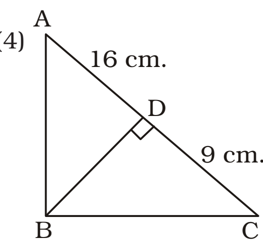
$\Rightarrow \frac{x}{3} + \frac{y}{-5} = 1$

$\Rightarrow \frac{x}{3} - \frac{y}{5} = 1$

$\Rightarrow \frac{5x - 3y}{15} = 1$

$\Rightarrow 5x - 3y = 15$

**68.** (4)




$\Delta ADB \sim \Delta BDC$

$\Rightarrow \frac{AD}{BD} = \frac{BD}{DC}$

$\Rightarrow BD = \sqrt{AD \times DC}$

$= \sqrt{16 \times 9} = \sqrt{144} = 12$ cm.

In $\Delta BDC$,

$BC = \sqrt{BD^2 + DC^2}$

$= \sqrt{12^2 + 9^2} = \sqrt{144 + 81}$

$= \sqrt{225} = 15$ cm.

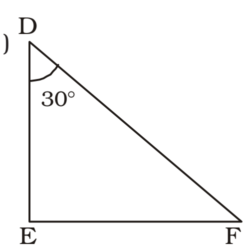
**69.** (3) $\tan 45^\circ - \frac{1}{\sqrt{3}} \sec 60^\circ$

$= 1 - \frac{1}{\sqrt{3}} \times 2 = 1 - \frac{2}{\sqrt{3}}$

$= \frac{\sqrt{3} - 2}{\sqrt{3}} = \frac{(\sqrt{3} - 2)\sqrt{3}}{3}$

$= \frac{3 - 2\sqrt{3}}{3}$

**70.** (1)



$\tan 30° = \frac{EF}{DE}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{6\sqrt{3}}{DE}$

$\Rightarrow DE = 6\sqrt{3} \times \sqrt{3} = 18$ cm.

**71.** (1) $\sin\theta = \frac{20}{29}$

$\therefore \cos\theta = \sqrt{1 - \sin^2\theta}$

$= \sqrt{1 - \left(\frac{20}{29}\right)^2} = \sqrt{1 - \frac{400}{841}}$

$= \sqrt{\frac{841 - 400}{841}} = \sqrt{\frac{441}{841}} = \frac{21}{29}$

$\therefore \sec\theta = \frac{29}{21}$

**72.** (3) The model A and model D have same memory size (= 8 GB).

**73.** (1) Memory of model C is 8 GB less than that of model A, even if memory of model C was doubled.
Illustration :
16 – 2 × 4 = 18 – 8
= 8 GB

**74.** (1) When memory of model D was halved = $\frac{16}{2}$ = 8 GB

Memory of model B = 2
Required per cent

$= \frac{8 - 2}{2} \times 100$

$= \frac{6}{2} \times 100 = 300\%$

**75.** (2) The amount paid for extra per GB memory = Rs. $\left(\frac{12000}{8}\right)$

= Rs. 1500

**76.** (3) **Stick to (phrasal Verb)** = adhere to something; remain affixed to something.
**Look at the sentence :**
He stuck to his decision.
It is preposition related error. Hence, stuck to her hair should be used here.

**78.** (3) **Effect (Noun)** = result; consequence; outcome.
**Affect (Verb)** = influence; exert influence on.
**Plural subject (effects)** → plural verb (include).

**79.** (2) **Contrary to** → in conflict with; against; conflicting with.
**Look at the sentence :**
Contrary to his expectations, he found the atmosphere exciting.

**80.** (3) **Ravine/abyss (Noun)** = a deep narrrow gorge with steep sides.
**Lucid (Adjective)** = clear; transparent; explicit.
**Patent (Noun)** = licence; legal protection.
**Palpable (Adjective)** = perceptible; visible; appreciable.

**81.** (4) **Realm/dimension (Noun)** = domain; sphere; field.
**Look at the sentence :**
The realm of applied chemistry.
**Vault (Noun)** = arched room; a large room or chamber used for storage; basement; dome.
**Azure (Adjective)** = sky–blue; deep blue.
**Lid (Noun)** = cover; top covering.

**82.** (4) **Rebuff/snub (Verb)** = refuse; turn down; spurn.
**Look at the sentence :**
He was rebuffed by his beloved.
**Praise (Verb)** = extol; applaud.
**Look at the sentence :**
He was praised by his teacher.
**Rebuke (Verb)** = scold; reprimand.

**83.** (3) **Recede/ebb/wane (Verb)** = subside; shrink; flow back.
**Look at the sentence :**
The floodwaters had receded at last.
**Fade (Verb)** = dim; grow faint; disappear.
**Extend (Verb)** = expand; enlarge; increase; make larger.
**Look at the sentence :**
The car park has been extended.

**84.** (3) **It is up to you to make the next decision or leave.**
**Look at the sentence :**
I have done my part. Now, the ball is in your court (an area, marked for ball games).

**85.** (2) **A situation wherein someone has the privilege of enjoying two different opportunities.**
**Look at the sentence :**
She works in the city and lives in the country, so she enjoys the best of both worlds.

**86.** (2) Here, infinitive = to buy should be used.

**88.** (1) **Dulcify/soothe/allay (Verb)** = calm down; appease; pacify; reduce pain.

**89.** (4) **Legitimate (Adjective)** = legal; as per law.
**Evident/palpable (Adjective)** = visible; perceptible; apparent; obvious.

**90.** (3) Correct spelling is : Castigated.
**Castigate (Verb)** = reprimand, rebuke; scold.

**91.** (3) Correct spelling is : Possesses
**Possess (Verb)** = own, take control of.

**94.** (2) The curtains were changed by Sarla.
It is active voice of simple past tense.
Its passive voice is formed as follows :
Subject + was/ were + $V_3$ + by + object.

**95.** (4) My father asked the stranger where he lived.
It is direct speech of an interrogative sentence.
Its indirect speech is formed as follows :
⇒ 'said to' changes to asked
⇒ Wh–family word remains there as connector.
⇒ Simple present changes to simple past.
⇒ Pronouns change as per $\frac{SON}{123}$
⇒ An interrogative sentence changes to an assertive sentence

□□□

SET 34

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 20.08.2017 (Shift-III)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :

Cotton : White :: Coal : ?

(1) Fire (2) Mine
(3) Wood (4) Black

**2.** Select the related letters from the given alternatives :

WVT : SRP :: MLJ : ?

(1) KHG (2) IHG
(3) IHF (4) HEF

**3.** Select the related number from the given alternatives :

12.5 : 6.25 :: 7 : ?

(1) 3.5 (2) 3.25
(3) 6.5 (4) 12

**4.** Select the odd word from the given alternatives :

(1) Apple (2) Mango
(3) Orange (4) Almond

**5.** Select the odd letters from the given alternatives :

(1) UTS (2) PNM
(3) KIH (4) FDC

**6.** Select the odd number from the given alternatives :

(1) 24 (2) 39
(3) 65 (4) 51

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :

Money, Amity, Camera, Animal, Telomere, ?

(1) Talisman (2) Litmus
(3) Matter (4) Shame

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :

CDE, IHG, KLM, QPO, STU, ?

(1) YXW (2) WXY
(3) XYW (4) XWY

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :

6, 18, 54, ? , 486, 1458

(1) 164 (2) 160
(3) 168 (4) 162

**10.** Arnav's birthday is on Tuesday 14th March. On what day of the week will be Pranay's Birthday in the same year if Pranay was born on 13th September?

(1) Monday (2) Tuesday
(3) Wednesday (4) Thursday

**11.** The weights of 4 boxes are 90, 40, 80 and 50 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?

(1) 200 (2) 260
(3) 180 (4) 170

**12.** From the given words, select the word which cannot be formed using the letters of the given word.

**LATCHING**

(1) THING (2) CHAIN
(3) CHEAT (4) CLING

**13.** If BOULDER is coded as ZMSJBCP, then how will ELK be coded as?

(1) XIG (2) EOC
(3) CJI (4) BXM

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?

56 ÷ 8 + 12 – 72 = ?

(1) 32 (2) 88
(3) 44 (4) 82

**15.** If 6 # 30 = 5; 8 # 24 = 3; 7 # 28 = 4; then what is the value of 8 # 40 = ?

(1) 47 (2) 4
(3) 5 (4) 24

**16.** Select the missing number from the given responses :

| 134 | 34 | 100 |
|---|---|---|
| 117 | 86 | 31 |
| 87 | ? | 64 |

(1) 120 (2) 23
(3) 55 (4) 30

**17.** A plane flies 100 km West, then it turns South and flies 150 km, then it turns West and flies 300 km, then it turns to its right and flies 150 km. Where is it now with reference to its starting position?

(1) 400 km East
(2) 200 km West
(3) 400 km West
(4) 200 km East

**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.

**Statements :**

1. All dawn is day.
2. No day is night.

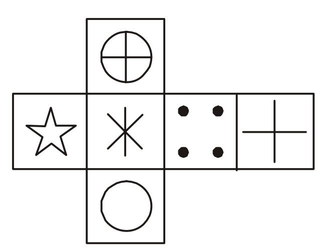
**Conclusions :**

I. No night is day.
II. Some dawn is night.

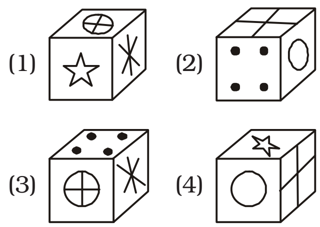
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

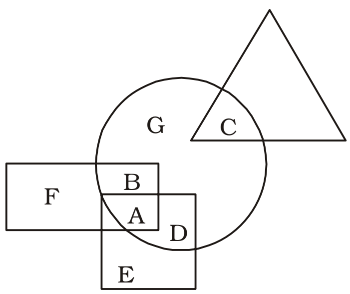
**Question Figure :**



**Answer Figures :**



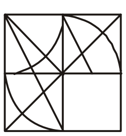
**20.** In the following figure, square represents Runners, triangle represents Scientists, circle represents Indians and rectangle represents Mothers. Which set of letters represents Indians who are runners?



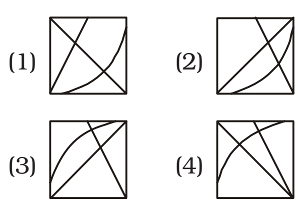

(1) F,B,D,E (2) A,D
(3) G,C,D (4) B,C,G, F

**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

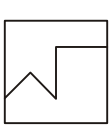


**Answer Figures :**

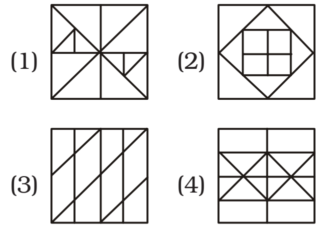


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

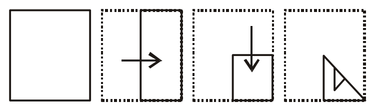


**Answer Figures :**

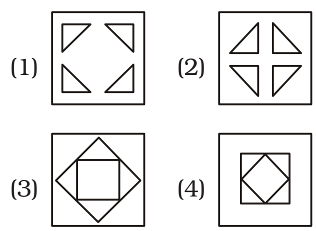


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures :**

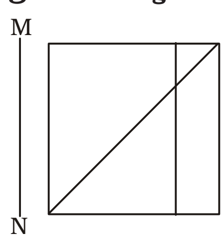


**Answer Figures :**

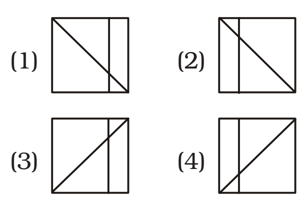


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of **Matrix-I** are numbered from 0 to 4 and that of **Matrix-II** are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 10, 22 etc and 'Z' can be represented by 58, 85 etc. Similarly, you have to identify the set for the word **'PERK'**.

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | F | G | J | E | A |
| 1 | K | J | A | L | I |
| 2 | D | D | K | H | C |
| 3 | B | A | I | G | L |
| 4 | M | E | J | L | D |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | X | W | R | Z | T |
| 6 | O | Q | U | T | N |
| 7 | X | O | T | V | O |
| 8 | Z | S | N | O | V |
| 9 | P | Y | O | T | Y |

(1) 13, 02, 66, 68
(2) 95, 41, 57, 22
(3) 32, 02, 87, 56
(4) 30, 04, 75, 96

## GENERAL AWARENESS

**26.** If the ___ firm has zero costs or only has fixed cost, the quantity supplied in equilibrium is given by the point where the marginal revenue is zero.
(1) Perfect Competition
(2) Monopoly
(3) Oligopoly
(4) Monopolistic Competition

**27.** The short run marginal cost curve is ____ shaped.
(1) U (2) V
(3) X (4) W

**28.** "Betting and gambling" is listed in the _____ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** There are total ____ parliamentary seats (Lok Sabha constituency) in West Bengal.
(1) 42 (2) 2
(3) 14 (4) 40

**30.** In 1916 Mahatma Gandhi travelled to _____ to inspire the peasants to struggle against the oppressive plantation system.
(1) Dandi (2) Sabarmati
(3) Champaran
(4) Chauri Chaura

**31.** Mahatma Gandhi returned to India from _____ in January 1915.
(1) South Africa
(2) England
(3) USA
(4) Russia

**32.** _____ is separated from India by a narrow channel of sea formed by Palk Strait and the Gulf of Mannar.
(1) Sri Lanka
(2) Myanmar
(3) Bangladesh
(4) Pakistan

**33.** The land mass of India has an area of ____ million square km.
(1) 1.28 (2) 2.28
(3) 3.28 (4) 4.28

**34.** _____ being a higher category, is the assemblage of families which exhibit a few similar characters.
(1) Order (2) Species
(3) Genus (4) Class

**35.** Sexual reproduction in Algae that takes place through fusion of two dissimilar size gametes is called?
(1) Zoospores
(2) Anisogamous
(3) Isogamous
(4) Oogamous

**36.** The animals in which the body cavity is absent are known as _____.
(1) Coelomates
(2) Wild
(3) Pseudocoelomates
(4) Acoelomates

**37.** According to the Second Law of Motion, for a given force, acceleration is inversely proportional to the _____ of an object.
(1) density (2) volume
(3) force (4) mass

**38.** The coil wire in the electric room heater or electric cooking heater is called _____.
(1) Circuit (2) Element
(3) Filament (4) Cells

**39.** ____ software are freely available and can be edited and customized by anyone.
(1) Free Source
(2) Open Source
(3) Easy Source
(4) Unpaid Source

**40.** ____ is obtained by evaporation of sea.
(1) Sugar (2) Iron
(3) Salt (4) Steel

**41.** The passage of an electric current through a conducting liquid causes _____.
(1) Galvanisation
(2) Evaporation
(3) Physical Reaction
(4) Chemical Reaction

**42.** ____ is the number of individuals of the population who left the habitat and gone elsewhere during the time period under consideration.
(1) Natality
(2) Mortality
(3) Immigration
(4) Emigration

**43.** was launched by Prime Minister Narendra Modi as a part of the Beti Bachao, Beti Padhao campaign.
(1) Sukanya Samridhi Account
(2) Bal Swachta Mission
(3) Pradhan Mantri Jan Dhan Yojana
(4) Beti Bachao Beti Padhao Yojana

**44.** Who created the first mechanical computer, which proved to be the prototype for future computers?
(1) Archim edes
(2) John Harrison
(3) Cai Lun
(4) Charles Babbage

**45.** In which sport did India win Bronze medal at Rio Olympics 2016?
(1) Badminton
(2) Boxing (3) Hockey
(4) Wrestling

**46.** Ajanta and Ellora caves are situated in which state of India?
(1) Kerala (2) Odisha
(3) Maharashtra
(4) Jammu & Kashmir

**47.** To whom the Nobel Prize in Physiology or Medicine 2016 was awarded?
(1) David J. Thouless
(2) Yoshinori Ohsumi
(3) J. Michael Kosterlitz
(4) Sir J. Fraser Stoddart

**48.** Which of the statements given below are correct?
1. The author of 'A Foreign Policy For India' is L.K Advani.
2. 'Wings of Fire' is a book written by A.P.J Abdul kalaam.
3. 'Open' is an Autobiography of Andre Agassi.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** According to Stockholm International Peace Research Institute, with spending of $55.9 Billion in 2016, which country became world's fifth-largest military spender?
(1) China (2) USA
(3) Russia (4) India

**50.** Which of the following river originates in Nepal and flows into the Ganges?
(1) Kosi (2) Jhelum
(3) Chenab (4) Ravi

## QUANTITATIVE APTITUDE

**51.** $9997 \times 10003 = ?$
(1) 9999991 (2) 99999911
(3) 99999991 (4) 9999911

**52.** A can do a work in 36 days and B in 12 days. If they work together, in how many days will they be able to do the work?
(1) 8 (2) 6
(3) 10 (4) 9

**53.** What is the area (in sq cm.) of a rhombus if the lengths of the diagonals are 12 cm and 14 cm?
(1) 42 (2) 168
(3) 84 (4) 63

**54.** If the shopkeeper sells an item at Rs. 4400 which is marked at Rs. 5000, then what is the discount that he is offering?
(1) 20% (2) 12%
(3) 15% (4) 10%

**55.** The flight fare between two cities is increased in the ratio 9 : 11. What is the increase (in Rs.) in the fare, if the original fare was Rs. 18,000?
(1) 22000 (2) 3600
(3) 4000 (4) 20000

**56.** Of the three numbers whose average is 40, the first is $\frac{1}{3}$rd of the sum of other two. What is the first number?
(1) 20 (2) 50
(3) 25 (4) 30

**57.** A trader buys 500 kg. of cotton for Rs. 9,000. 10% of this cotton is spoiled due to rain. At what rate (Rs./kg) should he sell the rest to earn 10% profit?
(1) 25 (2) 30
(3) 22 (4) 20

**58.** A student has to secure 40% marks to pass. He gets 67 and fails by 13 marks. What is the maximum marks?
(1) 300 (2) 200
(3) 150 (4) 240

**59.** A spaceship travels at 1,260 km/h. How many metres does it travel in $\frac{1}{10}$th of a second?
(1) 126 (2) 35
(3) 36 (4) 125

**60.** If the amount received at the end of 2nd and 3rd year at Compound Interest on a certain Principal is Rs. 1,800, and Rs. 1,926 respectively, what is the rate of interest ?
(1) 7.5% (2) 7%
(3) 6% (4) 6.5%

**61.** If $\left(-\frac{1}{2}\right) \times (x - 5) + 3 = -\frac{5}{2}$, then what is the value of $x$?
(1) 16 (2) 4
(3) –6 (4) –4

**62.** If $a - b = 1$ and $ab = 6$ then what is the value of $(a^3 - b^3)$ ?
(1) 21 (2) 23
(3) 19 (4) 25

**63.** A number is greater than 58 times its reciprocal by $\frac{3}{4}$. What is the number?
(1) –8 (2) 12
(3) –12 (4) 8

**64.** What is the sum of the first 13 terms of an arithmetic progression if the first term is –10 and last term is 26?
(1) 104 (2) 140
(3) 84 (4) 98

**65.** What is the reflection of the point (–0.5, 6) in the $x$-axis?
(1) (0.5, –6) (2) (–6, –0.5)
(3) (6, –0.5) (4) (–0.5, –6)

**66.** In what ratio does the point T($x$, 0) divide the segment joining the points S(–4, –1) and U (1, 4)?
(1) 1 : 4 (2) 4 : 1
(3) 1 : 2 (4) 2 : 1

**67.** At what point does the line $2x - 3y = 6$ cuts the Y-axis?
(1) (0, 2) (2) (–2, 0)
(3) (2, 0) (4) (0, –2)

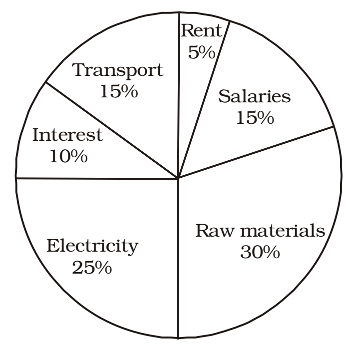
**68.** The areas of two similar triangles ΔABC and ΔPQR are 36 sq cms and 9 sq cms respectively. If PQ = 4 cm then what is the length of AB (in cm)?
(1) 16 (2) 12
(3) 8 (4) 6

**69.** What is the value of cot 45° + cosec 60° ?
(1) $\frac{(\sqrt{6}+1)}{\sqrt{3}}$ (2) $\frac{(1+\sqrt{3})}{2}$
(3) $\frac{5}{\sqrt{3}}$ (4) $\frac{(\sqrt{3}+2)}{\sqrt{3}}$

**70.** ΔLMN is right angled at M. If m∠N = 60°, then tan L =____.
(1) $\frac{1}{2}$ (2) $\frac{1}{\sqrt{3}}$
(3) $\frac{1}{\sqrt{2}}$ (4) 2

**71.** If $\tan\theta = \frac{4}{3}$, then what is the value of $\sin\theta$ ?
(1) 1.25 (2) 0.8
(3) $\frac{4}{3}$ (4) $\frac{3}{4}$

**Directions (72–75) :** The pie-chart shows the breakup in percentage of the various expenses of a Company. Study the diagram and answer the following questions.




**72.** Which is the second biggest expense of the company?
(1) Raw materials
(2) Salaries
(3) Transport
(4) Electricity

**73.** The ratio of company's expenditure on raw material and transport to salaries is:
(1) 2 : 1 (2) 1 : 1
(3) 1 : 2 (4) 3 : 1

**74.** The company's expenditure on interest is greater than expenditure on rent by :
(1) 100% (2) 50%
(3) 200% (4) 150%

**75.** If the total expenses of the company are Rs. 50 crores, the total expenditure (in Rs. crores) on transport and electricity is :
(1) 7.5 (2) 12.5
(3) 20 (4) 10

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** At this moment that (1)/ terrible door burst noisily open and (2)/ banged for the wall. (3)/No Error (4)

**77.** While an electron (1)/ carries a negative electrical (2) charge, a neutron is neutral. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** The big stone monument was the only ______ the lost traveller remembered.
(1) specimen
(2) souvenir
(3) piece
(4) landmark

**79.** The airline was unable to give us a reason for the ______ departure delay.
(1) indivisible
(2) invincible
(3) invisible
(4) inexplicable

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the given word.

**80. Cajole**
(1) Disenchant
(2) Entice
(3) Repulse
(4) Bully

**81. Fustian**
(1) Unpretentions
(2) Timid
(3) Arrogant
(4) Courteous

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the given word.

**82. Cavalier**
(1) Condescending
(2) Curt (3) Humble
(4) Haughty

**83. Vigilance**
(1) Indifference
(2) Diligence
(3) Acuity
(4) Circumspection

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Give somebody a ring**.
(1) Propose marriage
(2) Inform about the death of a loved one
(3) Call someone on the telephone
(4) Trap somebody in a difficult relationship

**85. Leave no stone unturned.**
(1) Search for the hidden treasure
(2) Do a futile task
(3) Be known for achieving a tremendous feat
(4) Try every possible course of action in order to achieve something

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "no improvement".

**86.** She and Dad would **(has had loved)** Amit.
(1) has loved (2) have loved
(3) to loved
(4) No improvement

**87.** Someone must **(being)** killed.
(1) have been
(2) has been
(3) been
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. The state or quality of being holy**
(1) Avarice (2) Baseness
(3) Sanctity (4) Parsimony

**89. A substance easily evaporated at normal temperatures.**
(1) Volatile (2) Steadfast
(3) Enduring (4) Definite

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) hypnotyst
(2) hipnotyst
(3) hipnotist
(4) hypnotist

**91.** (1) theurise (2) theoris
(3) theuris (4) theorise

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. They had seen enough of the**
X. them to come a step farther
Y. desert already, and no number
Z. of knives would have tempted
(1) YXZ (2) YZX
(3) XZY (4) XYZ

**93. Such are the strata which we**
X. species as those now living in the Mediterranean
Y. meet with in the south of Sicily, filled
Z. with shells for the most part of the same
(1) YXZ (2) XZY
(3) XYZ (4) YZX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**The movie critic wrote a sarcastic review.**
(1) A sarcastic review is written by the movie critic.
(2) A review which is sarcastic was written by the movie critic.
(3) A review which is sarcastic is written by the movie critic.
(4) A sarcastic review was written by the movie critic.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best

expresses the same sentence in Indirect/Direct speech.

**The trainee asked his boss, "Shall I email this letter again, Sir?"**

(1) The trainee asked his boss politely if he shall email that letter again.
(2) The trainee asked his boss politely if he should email that letter again, sir.
(3) The trainee asked his boss politely if he shall email that letter again, sir.
(4) The trainee asked his boss politely if he should email that letter again.

**Directions (96–100) :** A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

The flora and fauna of Cubbon Park captures our attention more than anything else. But when you take time to look closely at the statue, you will marvel at its sheer grandeur. Sculpted by Sir Thomas Brock, the 11 feet high marble statue is larger than life. It brings out the personality of Queen Victoria, who had been the Monarch of Great Britain from 1837 till 1901, depicting a rather proud, stern person with pronounced features.

In 1906, the statue was unveiled in the city by George Frederick Ernest Albert, Prince of Wales and Duke of Cornwall and York, making it stand in all its glory in its 111th year. Even though there is a wealth of history to the statue, and it was made to appear imposing, the busy Bengalureans would probably refer to it as just another landmark. As the workers are busy in discussion on the instructions given to them, life continues as usual in the Park.

**96.** Queen Victoria ruled Great Britain for how many years?
(1) 64 years (2) 34 years
(3) 54 years (4) 44 years

**97.** How many people unveiled the Queen Victoria statue at Cubbon Park?
(1) One (2) Six
(3) Four (4) Two

**98.** The Bengalureans would refer to the Queen Victoria statue as ______.
(1) wealth of history
(2) a landmark
(3) Symbol of British rule
(4) Bengaluru culture

**99.** Queen Victoria had all of the following traits, except _____.
(1) proud
(2) generous
(3) stern
(4) pronounced features

**100.** Which of the following is false regarding the Queen Victoria statue in Bengaluru?
(1) It is made of marble
(2) It is 11 feet tall
(3) It is 111 years old
(4) It is standing in Queen Victoria park

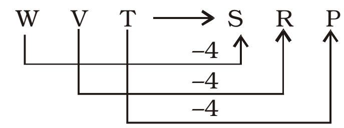
## ANSWERS

| **1.** (4) | **2.** (3) | **3.** (1) | **4.** (4) |
|---|---|---|---|
| **5.** (1) | **6.** (3) | **7.** (1) | **8.** (1) |
| **9.** (4) | **10.** (3) | **11.** (1) | **12.** (3) |
| **13.** (3) | **14.** (1) | **15.** (3) | **16.** (2) |
| **17.** (3) | **18.** (1) | **19.** (4) | **20.** (2) |
| **21.** (4) | **22.** (4) | **23.** (2) | **24.** (2) |
| **25.** (2) | **26.** (2) | **27.** (2) | **28.** (2) |
| **29.** (1) | **30.** (3) | **31.** (1) | **32.** (1) |
| **33.** (3) | **34.** (1) | **35.** (2) | **36.** (4) |
| **37.** (4) | **38.** (2) | **39.** (2) | **40.** (3) |
| **41.** (4) | **42.** (4) | **43.** (1) | **44.** (4) |
| **45.** (4) | **46.** (3) | **47.** (2) | **48.** (1) |
| **49.** (4) | **50.** (1) | **51.** (3) | **52.** (4) |
| **53.** (3) | **54.** (2) | **55.** (3) | **56.** (4) |
| **57.** (3) | **58.** (2) | **59.** (2) | **60.** (2) |
| **61.** (1) | **62.** (3) | **63.** (4) | **64.** (1) |
| **65.** (4) | **66.** (1) | **67.** (4) | **68.** (3) |
| **69.** (4) | **70.** (2) | **71.** (2) | **72.** (4) |
| **73.** (4) | **74.** (1) | **75.** (3) | **76.** (3) |
| **77.** (4) | **78.** (4) | **79.** (4) | **80.** (2) |
| **81.** (3) | **82.** (3) | **83.** (1) | **84.** (3) |
| **85.** (4) | **86.** (2) | **87.** (1) | **88.** (3) |
| **89.** (1) | **90.** (4) | **91.** (4) | **92.** (2) |
| **93.** (4) | **94.** (4) | **95.** (4) | **96.** (1) |
| **97.** (4) | **98.** (2) | **99.** (2) | **100.** (4) |

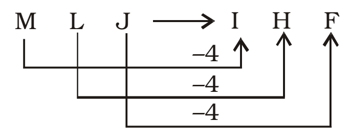
## EXPLANATIONS

**1.** (4) Cotton appears white. Similarly, coal appears black.

**2.** (3)




Similarly,




**3.** (1) $12.5 \times 0.5 = 6.25$
Similarly,
$7 \times 0.5 = 3.5$

**4.** (4) Almond is a type of tree related to the plum; it is the edible nut inside the fruit of this tree. Apple, mango and orange are fruits with juicy flesh.

**5.** (1) $P \xrightarrow{-2} N \xrightarrow{-1} M$

$K \xrightarrow{-2} I \xrightarrow{-1} H$

$F \xrightarrow{-2} D \xrightarrow{-1} C$

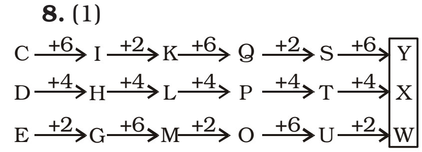
But,

$U \xrightarrow{-1} T \xrightarrow{-1} S$

**6.** (3) Except the number 65, all other numbers are multiples of 3.
$24 = 3 \times 8$
$39 = 3 \times 13$
$51 = 3 \times 17$
But,
$65 = 5 \times 13$

**7.** (1) After the first two words, one more letter is added to the next two words. Then, two more letters are added to the next two words.
Money, Amity → 5 letters
Camera, Animal → 6 letters
Telomere, Talisman → 8 letters

**8.** (1)




**9.** (4) $6 \times 3 = 18$
$18 \times 3 = 54$
$54 \times 3 = \boxed{162}$
$162 \times 3 = 486$
$486 \times 3 = 1458$

**10.** (3) 14th march ⇒ Tuesday
Number of days from 14th March to 13th September
= 17 + 30 + 31 + 30 + 31 + 31 + 13 days
= 183 days = 26 Weeks 1 day
Therefore,
13th September ⇒ Tuesday + 1
= Wednesday

**11.** (1) Possible weights of boxes :
(i) 90 + 40 = 130 Kilograms
(ii) 90 + 80 = 170 Kilograms
(iii) 90 + 50 = 140 Kilograms
(iv) 40 + 80 = 120 Kilograms
(v) 40 + 50 = 90 Kilograms
(vi) 80 + 50 = 130 Kilograms
(vii) 90 + 40 + 80 = 210 Kilograms
(viii) 90 + 40 + 50 = 180 Kilograms
(ix) 40 + 80 + 50 = 170 Kilograms
(x) 80 + 50 + 90 = 220 Kilograms
(xi) 90 + 40 + 80 + 50 = 260 Kilograms

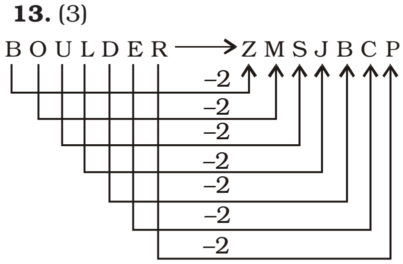
**12.** (3) There is no 'E' letter in the given word. Therefore, the word CHEAT cannot be formed.

L A [T] C [H I N G] ⇒ THING

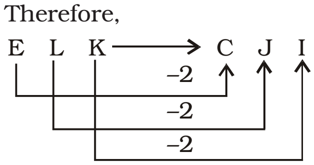
L [A] T [C H I N] G ⇒ CHAIN

[L] A T [C] H [I N G] ⇒ CLING

**13.** (3)




Therefore,




**14.** (1)

| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

56 ÷ 8 + 12 – 72 = ?
⇒ ? = 56 – 8 × 12 + 72
⇒ ? = 56 – 96 + 72
⇒ ? = 128 – 96 = [32]

**15.** (3) 6 # 30 = 5

$\Rightarrow \frac{30}{6} = 5$

8 # 24

$\Rightarrow \frac{24}{8} = 3$

7 # 28

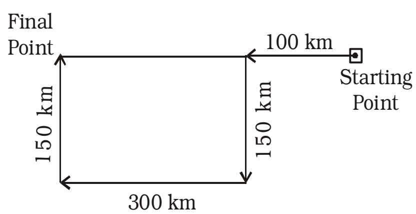
$\Rightarrow \frac{28}{7} = 4$

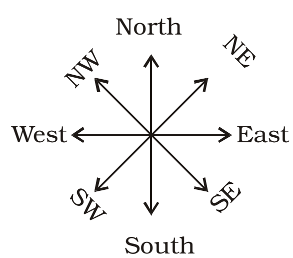
Therefore,
8 # 40

$\Rightarrow \frac{40}{8} = \boxed{5}$

**16.** (2) First Row
134 – 34 = 100
Second Row
117 – 86 = 31
Third Row
87 – ? = 64
⇒ ? = 87 – 64 = [23]

**17.** (3)

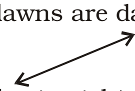



Now, plane is 400 km to the west of the starting point.

**18.** (1) First Premise is Universal Affirmative (A-type).
Second Premise is Universal Negative (E-type).

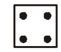
All dawns are days.

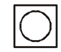


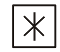
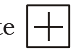
No day is night.

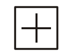
A + E ⇒ E– type of Conclusion
"No dawn is night".
Conclusion I is the Converse of the second Premise.

**19.** (4) After folding the figure :

lies opposite 

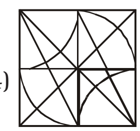
lies opposite 

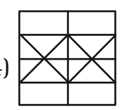
 lies opposite 

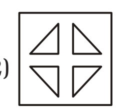
If is on the top and is on the front surface,  would not be visible.

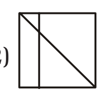
Therefore, the cube given in the Answer Figure (4) cannot be formed.

**20.** (2) Indians who are runners can be represented by the region common to circle and square. Such region is represented by the letters A and D.

**21.** (4) 

**22.** (4) 

**23.** (2) 

**24.** (2) 

**25.** (2) P ⇒ 95
E ⇒ 03, 41
R ⇒ 57
K ⇒ 10, 22

| Option | P | E | R | K |
|---|---|---|---|---|
| (1) | ~~13~~ | ~~02~~ | ~~66~~ | ~~68~~ |
| (2) | 95 | 41 | 57 | 22 |
| (3) | ~~32~~ | ~~02~~ | ~~87~~ | ~~56~~ |
| (4) | ~~30~~ | ~~04~~ | ~~75~~ | ~~96~~ |

**26.** (2) If the monopoly firm has zero costs or only has fixed cost, the quantity supplied in equilibrium is given by the point where marginal revenue is zero. In contrast, perfect competition would supply an equilibrium quantity given by the point where average revenue is zero. The essence of

monopoly power is the ability to alter the price of a product. There is only one seller or firm in the market facing many buyers.

**27.** (2) A short-run marginal cost curve graphically represents the relation between marginal (i.e., incremental) cost incurred by a firm in the short-run production of a good or service and the quantity of output produced. It is usually U-shaped.

This U shape is directly attributable to increasing, then decreasing marginal returns (and the law of diminishing marginal returns). As marginal product (and marginal returns) increases for relatively small output quantities, marginal cost declines. Then as marginal product (and marginal returns) decreases with the law of diminishing marginal returns for relatively large output quantities, marginal cost increases.

**28.** (2) Betting and gambling come under State List or List-II. It is a list of 61 items (initially there were 66 items in the list) in Schedule Seven to the Constitution of India. The state list contains the areas in respect of which only the State Legislature can make laws.

**29.** (1) There are 42 Lok Sabha Constituencies in West Bengal. Members of the Lok Sabha are elected by adult universal suffrage and a first-past-the-post system to represent their respective constituencies. The Lok Sabha (House of the People) is the Lower house of India's bicameral Parliament.

**30.** (3) Gandhiji travelled to Champaran in Bihar in 1917 to know about the plight of indigo peasants under the oppressive 'Tinkathia' plantation system. Under this system, the peasants were forced by the British to plant 3 out of 20 parts of his land with indigo. Gandhiji launched Champaran Satyagraha in support of their cause.

**31.** (1) Gandhi returned to India from South Africa in 1915. He came back the request of Gopal Krishna Gokhale, conveyed to him by C. F. Andrews. He spent 21 years in South Africa as a lawyer.

**32.** (1) Sri Lanka is separated from the mainland portion of the Indian subcontinent by the Gulf of Mannar and Palk Strait. It is an island country in South Asia, located southeast of India and northeast of the Maldives.

**33.** (3) India is the seventh-largest country in the world, with a total area of 3,287,263 square kilometres. India measures 3,214 km from north to south and 2,933 km from east to west. It has a land frontier of 15,200 km and a coastline of 7,516.6 km.

**34.** (1) Order is an assemblage of families which exhibit a few similar characters. The similar characters are less in number as compared to different genera included in a family. A class includes one or more orders.

**35.** (2) In algae, sexual reproduction takes place through fusion of two gametes. It is of two types on the basis of the size of gametes : isogamous (where male and female gametes are morphologically similar) and heterogamous (anisogamous and oogamous). Anisogamous fusion happens when gametes are dissimilar in size.

**36.** (4) Animals that have a cavity between body wall and digestive tract are known as coelomates for e.g.. annelids, molluscs, arthropods, Echinodermata, and chordates etc. In contrast, animals in which the body cavity is absent are known as acoelomates. Platyhelminthes is an example of acoelomates. The presence or absence of body cavity or coelom plays a very important role in the classification of animals.

**37.** (4) Newton's second law of motion can be formally stated as follows : The acceleration of an object as produced by a net force is directly proportional to the magnitude of the net force, in the same direction as the net force, and inversely proportional to the mass of the object.

**38.** (2) This coil of wire in an electric room heater or electric cooking heater is called an element. When these appliances are switched on after connecting to the electric supply, their elements become red hot and give out heat. The amount of heat produced in a wire depends on its material, length and thickness.

**39.** (2) Open Source Software is softwarethat is freely available, and anyone is freely licensed to use, copy, study, and change the software in any way. This is in contrast to proprietary software, where the software is under restrictive copyright and the source code is usually hidden from the users.

**40.** (3) Salt is produced from the evaporation of seawater. Sea water contains a large amount of common salt and the salts of other metals dissolved in it. Near the sea-shore, the sea water is collected in shallow pits and allowed to evaporate in sunshine. In a few days, the water evaporates, leaving behind salt.

**41.** (4) When an electric current is passed through a conducting liquid (i.e. acidulated water) called an electrolyte, it is decomposed into its constituents due to chemical action. The practical application of this effect is utilized in electroplating, block making, battery charging, metal refinery, etc.

**42.** (4) Emigration is the number of individuals of the population who left the habitat and gone elsewhere during the time period under consideration. It leads to decrease of size of local population. In contrast, immigration is the number of individuals of the same species that have come into habitat

from elsewhere. It leads to increase in population.

**43.** (1) Prime Minister Narendra Modi, in January, 2015, launched twin programmes of "Beti Bachao, Beti Padhao" and "Sukanya Samriddhi account" in a bid to encourage birth and education of girls and tackle the abysmally low child sex ratio of 918 girls for 1000 boys. Under Sukanya Samriddhi Yojna, girl children below 10 years will have bank accounts with more interest and income tax benefits.

**44.** (4) English mathematician and inventor Charles Babbage, who is credited with havinginvented the first mechanical computer that eventually led to more complex electronic designs. The 'Analytical Engine' invented by him in 1837 contained an Arithmetic Logic Unit, basic flow control, and integrated memory; hailed as the first general-purpose computer concept

**45.** (4) Indian freestyle wrestler Sakshi Malik won bronze medal in the women's 58 kg event at the 2016 Rio Olympics. Another Indian woman, badminton player P.V. Sindhu won silver medal in badminton. India won two medals at the Rio Olympics.

**46.** (3) Ajanta and Ellora caves are located in Aurangabad district of Maharashtra. The Ajanta Caves are about 29 rock-cut Buddhist cave monuments which date from the 2nd century BCE to about 480 or 650. The Ellora caves are a group of caves featuring Buddhist, Hindu and Jain monuments, and artwork, dating from the 600-1000 CE. Both sites are UNESCO World Heritage Site.

**47.** (2) Yoshinori Ohsumi of the Tokyo Institute of Technology, in October 2016, won the 2016 Nobel Prize in Physiology or Medicine for his discoveries about "autophagy" — a fundamental process cells use to degrade and recycle parts of themselves. His work opened the path to understanding how cells adapt to starvation and respond to infection.

**48.** (1) 'A Foreign Policy for India' was authored by Inder Kumar Gujral, former Prime Minister of India. It was first published in 1998. Twice a Foreign Minister, Gujral authored a foreign policy doctrine called the "Gujral Doctrine," a set of principles to guide the conduct of foreign relations with India's immediate neighbours.

**49.** (4) According to the Stockholm International Peace Research Institute's annual report on defence spending, released in April 2017, India has become world's fifth-largest military spender spending at \$55.9 billion in 2016. The US remains the world's largest military followed by China, Russia, and Saudi Arabia.

**50.** (1) Koshi river originates in Nepal. Some of its headstreams rise beyond the Nepalese border in Tibet. From a major confluence of tributaries north of the Chatra Gorge onwards, the Koshi River is also known as Saptakoshi. After crossing into Bihar, it branches into distributaries before joining the Ganges near Katihar.

**51.** (3) ? = 9997 × 10003

$= (10000 - 3)(10000 + 3)$

$= (10000)^2 - (3)^2$

$= 100000000 - 9$

$= 99999991$

**52.** (4) (A + B)'s 1 day's work

$$= \frac{1}{36} + \frac{1}{12} = \frac{1+3}{36} = \frac{4}{36} = \frac{1}{9}$$

∴ Required time = 9 days

**53.** (3) Area of the rhombus

$$= \frac{1}{2} \times \text{product of diagonals}$$

$$= \frac{1}{2} \times 12 \times 14 = 84 \text{ sq. cm.}$$

**54.** (2) Discount = Marked price – Selling price

= Rs. (5000 – 4400) = Rs. 600

If discount be x%, then

$$5000 \times \frac{x}{100} = 600$$

$\Rightarrow 50x = 600$

$$\Rightarrow x = \frac{600}{50} = 12\%$$

**55.** (3) Old fare : New fare = 9 : 11

Original fare = Rs. 18000

$$\therefore \text{New fare} = \text{Rs.} \left(\frac{11}{9} \times 18000\right)$$

= Rs. 22000

∴ Increase = Rs. (22000 – 18000) = Rs. 4000

**OR**

Required increase

$$= \left(\frac{11-9}{9}\right) \times 18000$$

$$= \text{Rs.} \left(\frac{2}{9} \times 18000\right)$$

= Rs. 4000

**56.** (4) Let the first number be $x$.

∴ Sum of first and third number = $3x$

∴ $x + 3x = 40 \times 3$

$\Rightarrow 4x = 120$

$$\Rightarrow x = \frac{120}{4} = 30$$

**57.** (3) Quantity of remaining cotton after rain

$$= \left(\frac{500 \times 90}{100}\right) \text{kg.} = 450 \text{ kg.}$$

C.P. of 500 kg. of cotton = Rs. 9000

∴ To gain 10%,

S.P. of 450 kg. of cotton

$$= \frac{9000 \times 110}{100} = \text{Rs. } 9900$$

∴ S.P. per kg.

$$= \frac{9900}{450} = \text{Rs. } 22$$

**58.** (2) Let the maximum marks of exam be $x$.

According to the question,

$$x \times \frac{40}{100} = 67 + 13$$

$$\Rightarrow \frac{2x}{5} = 80$$

$\Rightarrow x = \frac{80 \times 5}{2} = 200$

**59.** (2) Speed of spaceship

= 1260 kmph

$= \left(\frac{1260 \times 5}{18}\right)$ m./sec.

= 350 m./sec.

$\therefore$ Distance covered in $\frac{1}{10}$ second

$= 350 \times \frac{1}{10} = 35$ metre

**60.** (2) $A = P\left(1 + \frac{R}{100}\right)^T$

According to the question,

$1800 = P\left(1 + \frac{R}{100}\right)^2$ ... (i)

$1926 = P\left(1 + \frac{R}{100}\right)^3$ ... (ii)

On dividing equation (ii) by (i),

$\frac{1926}{1800} = 1 + \frac{R}{100}$

$\Rightarrow \frac{R}{100} = \frac{1926}{1800} - 1$

$\Rightarrow \frac{R}{100} = \frac{1926 - 1800}{1800}$

$= \frac{126}{1800}$

$\Rightarrow R = \frac{126}{1800} \times 100$

= 7% per annum

**61.** (1) $-\frac{1}{2} \times (x - 5) + 3 = \frac{-5}{2}$

$\Rightarrow \frac{-x}{2} + \frac{5}{2} + 3 = \frac{-5}{2}$

$\Rightarrow \frac{x}{2} = \frac{5}{2} + \frac{5}{2} + 3$

$\Rightarrow \frac{x}{2} = 5 + 3 = 8$

$\Rightarrow x = 2 \times 8 = 16$

**62.** (3) $a - b = 1;\ ab = 6$

$\therefore a^3 - b^3 = (a - b)^3 + 3ab(a - b)$

$= (1)^3 + 3 \times 6 \times 1$

$= 1 + 18 = 19$

**63.** (4) Let the number be $x$.

According to the question,

$x - \frac{58}{x} = \frac{3}{4}$

$\Rightarrow \frac{x^2 - 58}{x} = \frac{3}{4}$

$\Rightarrow 4x^2 - 232 = 3x$

$\Rightarrow 4x^2 - 3x - 232 = 0$

$\Rightarrow 4x^2 - 32x + 29x - 232 = 0$

$\Rightarrow 4x(x - 8) + 29(x - 8) = 0$

$\Rightarrow (x - 8)(4x + 29) = 0$

$\Rightarrow x = 8$

**OR**

By the option (4),

$x - \frac{58}{x} = 8 - \frac{58}{8}$

$= 8 - \frac{29}{4} = \frac{32 - 29}{4} = \frac{3}{4}$

**64.** (1) First term $= a = -10$

Last term $= l = 26$

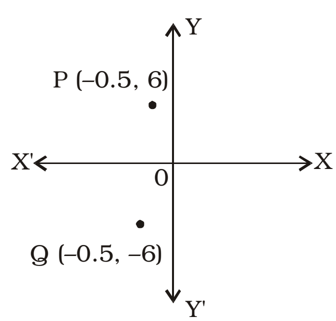
Number of terms $= n = 13$

$\therefore$ Required sum $= \frac{n}{2}(a + l)$

$= \frac{13}{2}(-10 + 26)$

$= \frac{13}{2} \times 16 = 104$

**65.** (4)



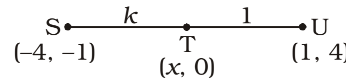

Point P (–0.5, 6) lies in second quadrant

Its image in $x$-axis will lie in third quadrant.

$\therefore$ Co-ordinates of Q

= (–0.5, –6)

**66.** (1)




When point $(x, y)$ divides the line joining points $(x_1, y_1)$ and $(x_2, y_2)$ in the respective ratio of $m_1 : m_2$ then

$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}$

$y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}$

Here, $(x_1, y_1) = (-4, -1)$

$(x_2, y_2) = (1, 4)$

$m_1 : m_2 = k : 1$

$(x, y) = (x, 0)$

$\therefore 0 = \frac{k \times 4 + 1(-1)}{k + 1}$

$\Rightarrow 4k - 1 = 0 \Rightarrow k = \frac{1}{4}$

**67.** (4) $x$–co-ordinate on Y axis = 0

$\therefore$ Putting $x = 0$ in the equation $2x - 3y = 6$,

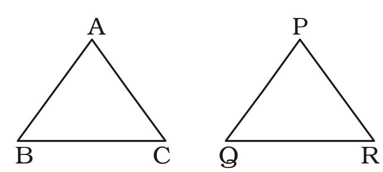
$\Rightarrow 2 \times 0 - 3y = 6$

$\Rightarrow -3y = 6$

$\Rightarrow y = \frac{6}{-3} = -2$

$\therefore$ Required co-ordinates of the point = (0, –2)

**68.** (3)




$\Delta ABC \sim \Delta PQR$

$\therefore \frac{AB}{PQ} = \frac{BC}{QR} = \frac{CA}{RP}$

$\therefore \frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta PQR} = \frac{AB^2}{PQ^2}$

$\Rightarrow \frac{36}{9} = \frac{AB^2}{(4)^2}$

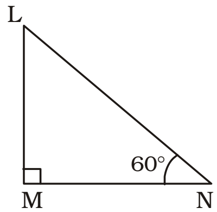
$\Rightarrow AB^2 = 4 \times 4 \times 4 = 64$

$\Rightarrow$ AB = $\sqrt{64}$ = 8 cm.

**69.** (4) cot 45° + cosec 60°

$= 1 + \frac{2}{\sqrt{3}} = \frac{\sqrt{3}+2}{\sqrt{3}}$

**70.** (2)




$\angle MNL = 60°$

$\therefore \angle MLN = 30°$

$\therefore$ tan L = tan 30° = $\frac{1}{\sqrt{3}}$

**71.** (2) $\tan\theta = \frac{4}{3}$

$\therefore \sec\theta = \sqrt{1+\tan^2\theta}$

$= \sqrt{1+\frac{16}{9}} = \sqrt{\frac{25}{9}} = \frac{5}{3}$

$\therefore \sin\theta = \frac{\tan\theta}{\sec\theta} = \frac{\frac{4}{3}}{\frac{5}{3}}$

$= \frac{4}{5} = 0.8$

**72.** (4) Ascending order of percentage expenditure :

Rent < Interest < Transport = Salaries < Electricity < Raw-materials

**73.** (4) Required ratio
= (30 + 15) : 15
= 45 : 15 = 3 : 1

**74.** (1) Required per cent

$= \left(\frac{10-5}{5}\right) \times 100 = 100\%$

**75.** (3) Percentage expenditure on transport and electricity
= (15 + 25)% = 40%

$\because$ 100% ≡ Rs. 50 crores

$\therefore$ 40% ≡ Rs. $\left(\frac{50}{100}\times 40\right)$ crores

= Rs. 20 crores

**76.** (3) **Bang (Verb)** = strike or put down something forcefully and noisily.

**Look at the sentence :**

She banged her fist angrily on the table.

Hence, banged on/against the wall ....should be used here.

**78.** (4) **Landmark (Noun)** = a building or place that is easily recognised.

**79.** (4) **Inexplicable (Adjective)** = unable to be explained or accounted for; incomprehensible.

**80.** (2) **Cajole (Verb)** = persuade someone to do something by sustained coaxing or flattery; entice; flatter; beguile.

**Look at the sentence :**

He really knows how to cajole people into doing what he wants.

**81.** (3) **Fustian (Adjective)** = pompous or pretentious speech or writing; bombastic; worthless; arrogant.

**Look at the sentence :**

He was unmoved by the fustian charade of the burial ceremony.

Its near synonym is arrogant.

**82.** (3) **Cavalier (Adjective)** = showing a lack of proper concern; off hand; arrogant; lofty; showing naughty attitude.

**Humble (Adjective)** = meek; respectful; submissive; unassertive.

**Look at the sentences :**

The editor takes a cavalier attitude to the concept of fact checking.

He was irritated by his cavalier attitude.

Please accept our humble apologies for the error.

**83.** (1) **Vigilance (Noun)** = watchfulness; attentiveness; alertness.

**Indifference (Noun)** = lack of interest, concern or sympathy.

**Look at the sentences :**

His security duties demand long hours of vigilance.

Many native speakers of a language show indifference to grammatical errors.

**84.** (3) **Give somebody a ring/buzz** = call someone on the telephone.

**Look at the sentence :**

I will give you a ring tomorrow.

**85.** (4) **Leave no stone unturned** = to do everything you can to achieve a good result.

**Look at the sentence :**

He left no stone unturned in his search for his natural mother.

**86.** (2) we use **would have** in past conditionals to talk about something that did not happen.

Hence, have loved ....... should be used here.

**87.** (1) Here, passive voice should be used as doer is silent. Hence, **have been** should be used here.

When expressing a personal opinion in the past, we mostly use **must have**.

It must have been great.

**90.** (4) **Hypnotist** = a person who uses hypnosis as a form of treatment or sometimes entertainment.

Hypnosis is a state of human consciousness involving focused attention and reduced awareness.

**91.** (4) **Theorise (Verb)** = form a theory about something; speculate; to develop a set of ideas.

**Look at the sentence :**

It is easy to theorise about what might have happened.

**94.** (4) Subject + was + $V_3$ + by + Object.

**95.** (4) **Connective** $\Rightarrow$ if/whether

Shall I email this letter again, sir? $\Rightarrow$ he should email that letter again.

**Sir** is replaced by politely/respectfully.

**99.** (2) **Generous (Adjective)** = liberal; lavish; magnanimous.

SET 35

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 21.08.2017 (Shift-I)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Cow : Calf :: Hen : ?
(1) Chick (2) Cock
(3) Egg (4) Fly

**2.** Select the related letters from the given alternatives :
DHL : AEI :: QUY : ?
(1) MQU (2) NRV
(3) OSW (4) PTX

**3.** Select the related number from the given alternatives :
0.5 : 2 :: 0.125 : ?
(1) 6 (2) 16
(3) 8 (4) 12

**4.** Select the odd word from the given alternatives :
(1) Book (2) Page
(3) Pen (4) Diary

**5.** Select the odd letters from the given alternatives :
(1) EGI (2) MOQ
(3) UWY (4) NLJ

**6.** Select the odd number from the given alternatives :
(1) 47 (2) 41
(3) 59 (4) 63

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series as per dictionary :
?, Lifelike, Lifeline, Lifelong
(1) Lifeless (2) Lifespan
(3) Lifelost (4) Lifework

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
B, C, E, H, L, ?
(1) Q (2) N
(3) O (4) P

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :
–4, ?, 3, 8, 14, 21
(1) 0 (2) 1
(3) –2 (4) –1

**10.** Meetu's birthday is on Wednesday 8th March. On what day of the week will be Ritu's birthday in the same year if Ritu was born on 10th July?
(1) Monday (2) Wednesday
(3) Friday (4) Saturday

**11.** The weights of 4 boxes are 30, 40, 50 and 80 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 120 (2) 110
(3) 100 (4) 130

**12.** From the given alternative words, select the word which cannot be formed using the letters of the given word :
**DUPLICATE**
(1) PLATE (2) DUCTILE
(3) LUCID (4) TEAM

**13.** If PRIMATE is coded as MOFJXQB, then how will COW be coded as?
(1) ZLT (2) EDC
(3) RFV (4) TGB

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
11 + 50 – 150 ÷ 200 = ?
(1) 200 (2) 500
(3) 250 (4) 50

**15.** If 7 × 1 = 12; 5 × 4 = 2; 6 × 4 = 4; then what is the value of 7 × 4 = ?
(1) 8 (2) 6
(3) 11 (4) 28

**16.** Select the missing number from the given responses :

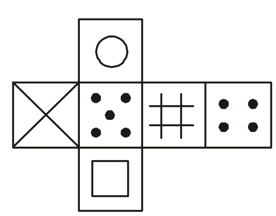
| 18 | 90 | 5 |
|---|---|---|
| 13 | 143 | 11 |
| 7 | ? | 5 |

(1) 12 (2) 2
(3) 53 (4) 35

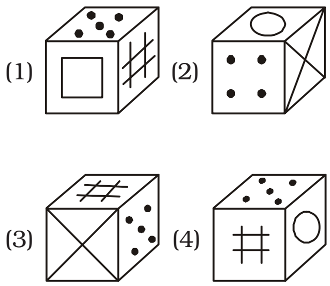
**17.** A man cycles 7 km East, then turns South and cycles 12 km, then turns West and cycles 7 km, then turns to his left and cycles 10 km. Where is he now with reference to his starting position?
(1) 22 kms South
(2) 2 kms South
(3) 22 kms East
(4) 2 kms East

**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
**Statements :**
All steel is iron.
No iron is solid.
**Conclusions :**
I. No steel is solid.
II. Some iron is steel.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

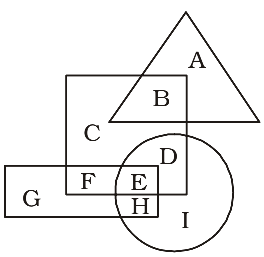
**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?
**Question Figure :**



**Answer Figures :**



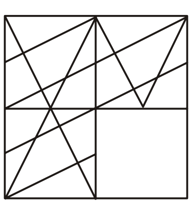
**20.** In the following figure, square represents athletes, triangle represents engineers, circle represents fathers and rectangle represents entrepreneurs. Which set of letters represents athletes who are either entrepreneurs or fathers?



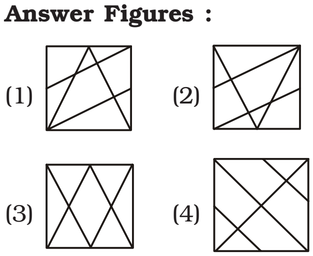

(1) F,E,D
(2) D,E,F,G,H,I
(3) G,H,I
(4) E,H

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

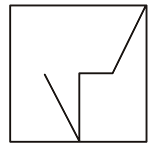


**Answer Figures :**

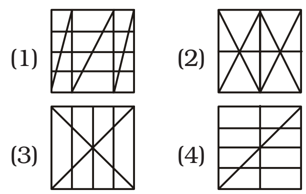


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

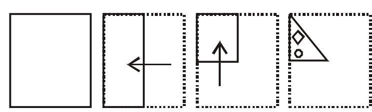


**Answer Figures :**

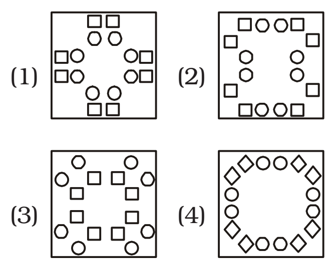


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

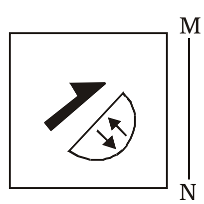


**Answer Figures :**

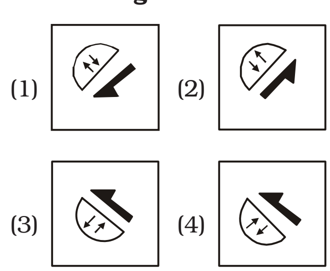


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'Y' can be represented by 55, 87 etc and 'Z' can be represented by 01, 14 etc. Similarly, you have to identify the set for the word **'VERY'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | W | Z | G | T | D |
| 1 | S | R | W | G | Z |
| 2 | X | F | S | D | E |
| 3 | Q | V | C | S | F |
| 4 | A | T | Q | Q | A |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | Y | N | L | I | Y |
| 6 | H | I | P | J | I |
| 7 | B | K | O | N | O |
| 8 | U | M | Y | B | P |
| 9 | J | O | H | L | K |

(1) 01,43,21,78
(2) 31,24,11,87
(3) 11,20,66,85
(4) 88,56,43,20

## GENERAL AWARENESS

**26.** The demand for a inferior good decreases with _______ in the consumer's income.
(1) increase (2) decrease
(3) constant (4) double

**27.** Goods for which the quantity that a consumer chooses, increases as the consumer's income increases and decreases as the income decreases are called?
(1) Inferior goods
(2) Normal goods
(3) Complementary goods
(4) Substitute goods

**28.** "Prevention of cruelty to animals" is listed in the ______ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** ______ makes laws on matters included in Union List and Concurrent List.
(1) Lok Sabha
(2) Ministry of Defence
(3) Prime Minister's Office
(4) Securities and Exchange Board of India

**30.** According to the categories of land mentioned in the Chola inscriptions _____ was known as the land for the maintenance of schools?
(1) Vellanvagai
(2) Brahmadeya
(3) Shalabhoga
(4) Devadana

**31.** Prince Salim was the name of the future Emperor ________.
(1) Babur (2) Humayun
(3) Jahangir (4) Akbar

**32.** _______ is the breaking up of the rocks on the earth's surface.
(1) Erosion (2) Weathering
(3) Attrition (4) Abrasion

**33.** The method of soil conservation in the coastal and dry regions where rows of trees are planted to check the wind movement to protect soil cover is called?
(1) Mulching
(2) Contour barriers
(3) Rock dam
(4) Shelter belts

**34.** Biological names are generally derived from which language?
(1) French (2) Latin
(3) Mexican (4) German

**35.** The members of rhodophyceae are commonly called ________ algae.
(1) Green (2) Brown
(3) Red (4) Yellow

**36.** Aurelia (Medusa) and Adamsia (Polyp) are examples of which Phylum?
(1) Ctenophora
(2) Annelida
(3) Coelenterata
(4) Aschelminthes

**37.** Energy in the form of heat is wasted when a machine is operated. This heat is generated due to ________.
(1) burning
(2) friction
(3) combustion
(4) lubrication

**38.** The incident ray, the ________ at the point of incidence and the reflected ray all lie in the same plane.
(1) surface
(2) tangent
(3) normal
(4) angle of reflection

**39.** In Microsoft Word, ______ allows us to move selected paragraphs to the right.
(1) Decrease Indent
(2) Increase Indent
(3) Double Indent
(4) Single Indent

**40.** Blue Vitriol is another name for which of the following?
(1) Copper Sulphate
(2) Oxygen
(3) Copper
(4) Magnesium Oxide

**41.** The rubbing surface of a matchbox has powdered glass and a little red ____________.
(1) antimony
(2) arsenic
(3) silicon
(4) phosphorus

**42.** A few organisms can tolerate and thrive in a wide range of temperatures. Such organisms are called
(1) Osmotic
(2) Eurythermal
(3) Stenothermal
(4) Hydrothermal

**43.** ________ scheme by the Central Government will strengthen the bond between all the states, regions, and districts of India.
(1) Uday Desh Ka Aam Nagrik
(2) Urja Ganga
(3) Ek Bharat Shrestha Bharat
(4) Namami Ganga Yojana

**44.** Who invented Velcro?
(1) Thomas Edison
(2) William Harvey
(3) George de Mestral
(4) Robert Boyles

**45.** Which nation will host the FIFA Men's World Cup to be held in the year 2018?
(1) Japan
(2) South Korea
(3) China
(4) Russia

**46.** Charminar was built by?
(1) Humayun
(2) Mohammed Quli Qutab Shah
(3) Ashoka
(4) Narasimha

**47.** Which of the following is an Indian military decoration awarded for valour, courageous action or selfsacrifice away from the battlefield?
(1) Ashok Chakra
(2) Dada Saheb Phalke Awards
(3) Arjuna Award
(4) Padma Shri

**48.** Which of the statements given below are correct?
1. The author of the novel 'Accelerando' is Charles Stross.
2. The author of the novel 'The Windup Girl' is Paolo Bacigalupi.
3. The author of the novel 'The Devil in Silver' is Josh Malerman.

(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** In March 2017, in which country was "world's largest artificial sun" switched on?
(1) China (2) USA
(3) Germany (4) Russia

**50.** With which other country does Bangladesh share its border besides India?
(1) China (2) Laos
(3) Bhutan (4) Myanmar

## QUANTITATIVE APTITUDE

**51.** What least number must be added to 329, so that the sum is completely divisible by 7?
(1) 1 (2) 0
(3) 2 (4) 3

**52.** A can do a work in 15 days and B in 30 days. If they work on it together, then in how many days will they be able to do 50% of the work?
(1) 5 (2) 6
(3) 4 (4) 3

**53.** What is the area (in sq. cm.) of an equilateral triangle of side 10 cm?
(1) $25\sqrt{3}$ (2) $50\sqrt{3}$
(3) $75\sqrt{3}$ (4) $10\sqrt{3}$

**54.** What is the effective discount (in %) on two successive discounts of 15% and 50%?
(1) 65 (2) 57.5
(3) 35 (4) 42.5

**55.** Profit of Rs. 42,500 has to be divided among three partners A, B and C in the ratio 3 : 5 : 9. How much (in Rs.) does A get?
(1) 12500 (2) 9500
(3) 22500 (4) 7500

**56.** The average weight of A, B and C is 49 kg. If the average weight of A and B is 35 kg and that of B and C is 62 kg, then the weight of B (in kgs) is
(1) 47 (2) 45
(3) 43 (4) 49

**57.** A shopkeeper by selling 6 items, earns a profit equal to the selling price of 1 item. What is his profit per cent?
(1) 20 (2) 25
(3) 30 (4) 35

**58.** What is the value of 125% of 25% of 80?
(1) 50 (2) 25
(3) 20 (4) 40

**59.** To cover a distance of 81 km in 1.5 hours what should be the average speed of the car in metre/second?
(1) 10 (2) 15
(3) 12 (4) 9

**60.** In 4 years at simple interest the principal increases by 32%. What will be the compound interest earned (in Rs.) on Rs. 24,000 in 3 years at the same rate?
(1) 5233 (2) 6332
(3) 5332 (4) 6233

**61.** If $\frac{5}{2}\left(\frac{8x}{3}-\frac{1}{2}\right)+\frac{13}{2}=\frac{2x}{3}$, then what is the value of $x$?
(1) $\frac{7}{8}$ (2) $\frac{8}{7}$
(3) $-\frac{8}{7}$ (4) $-\frac{7}{8}$

**62.** If $a^3 + b^3 = 72$ and $ab = 8$, then what is the value of $(a + b)$?
(1) 2 (2) 5
(3) 6 (4) 3

**63.** The sum of four times a fraction and 7 times its reciprocal is 16. What is the fraction?
(1) $\frac{2}{7}$ (2) $\frac{7}{2}$
(3) $\frac{4}{7}$ (4) $\frac{7}{4}$

**64.** What is the sum of the first 11 terms of an arithmetic progression if the 3rd term is –1 and the 8th term is 19?
(1) 204 (2) 99
(3) 225 (4) 104

**65.** What is the reflection of the point (–3, 2) in the line $x = -2$?
(1) (–3, –6) (2) (1, 2)
(3) (–3, 6) (4) (–1, 2)

**66.** Point P is the midpoint of segment AB. Coordinates of P are (1, 3) and that of A are (–3, 8). What are the coordinates of point B?
(1) (–5, –2) (2) (–5, 2)
(3) (5, 2) (4) (5, –2)

**67.** What is the slope of the line perpendicular to the line passing through the points (3, –2) and (4, 2)?
(1) $\frac{1}{4}$ (2) 4
(3) –4 (4) $-\frac{1}{4}$

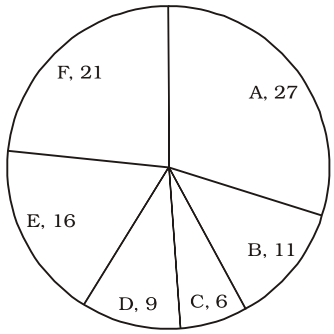
**68.** $\Delta ABC$ is similar to $\Delta PQR$. If ratio of perimeters of $\Delta ABC$ and $\Delta PQR$ is 3 : 7 and if PQ = 21 cm, then the length of AB (in cm) is
(1) 6 (2) 14
(3) 9 (4) 18

**69.** What is the value of 2 sec 45° + tan 30° ?
(1) $\frac{(2\sqrt{6}+1)}{\sqrt{3}}$ (2) $\sqrt{3}$
(3) $\frac{(2\sqrt{2}+3)}{\sqrt{6}}$
(4) $\frac{(9+2\sqrt{3})}{9}$

**70.** $\Delta ABC$ is right angled at B. If $m\angle A = 60°$, then what is the value of cot C?
(1) $\sqrt{2}$ (2) $\frac{1}{\sqrt{3}}$
(3) $\sqrt{3}$ (4) $\frac{2}{\sqrt{3}}$

**71.** If cosec $\theta = \frac{25}{7}$, then what is the value of cos $\theta$ ?
(1) $\frac{25}{24}$ (2) $\frac{7}{24}$
(3) $\frac{24}{25}$ (4) $\frac{7}{25}$

**Directions (72–75) :** The pie chart shows the votes in 1000s polled in favour of six candidates (A, B, C, D, E, F) contesting for a particular seat. Study the diagram and answer the following questions.




**72.** If candidate A is disqualified then which candidate will be declared the winner?
(1) E (2) B
(3) F (4) D

**73.** The winning candidate got how many more votes than the one who came second?
(1) 6000 (2) 5000
(3) 11000 (4) 7000

**74.** Analysts believe that if candidate E had not stood in the fray then votes that he got would have been equally divided between F and C, then what would have been the result?
(1) A would have lost by 1000 votes
(2) F would have won by 2000 votes
(3) F would have lost by 2000 votes
(4) A would have won by 1000 votes

**75.** If voting attendance was 60% then how many names must be there in the voter list?
(1) 225000 (2) 90000
(3) 144000 (4) 150000



## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** A slow smile worked (1)/ its way cross his (2)/ face and into his eyes. (3)/No Error (4)

**77.** His expression gave no (1)/ clue of what was going (2)/ on among his head. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

**78.** After being given ______ warnings for disrupting class, Thomas was finally sent to the principal's office.
(1) singular
(2) lone
(3) numerous
(4) unique

**79.** The _______ "pretty ugly" implies that a person can be both attractive and unattractive at the same time.
(1) simile
(2) metaphor
(3) alliteration
(4) oxymoron

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Cynicism**
(1) Conviction
(2) Bitterness
(3) Credence
(4) Intuition

**81. Pinnacle**
(1) Culmination
(2) Nadir
(3) Nethermost
(4) Basal

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Befuddle**
(1) Baffle (2) Daze
(3) Fluster (4) Explicate

**83. Supplant**
(1) Supersede
(2) Surrender
(3) Usurp
(4) Oust

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Get the message**
(1) Understand what is implied by a remark or action
(2) Communicate using a secret language
(3) Find it difficult to understand a different language
(4) Fire someone from a job

**85. Keep at bay**
(1) Keep your problems to yourselves
(2) To control something and prevent it from causing you problems
(3) Not share a secret
(4) Maintain a long distance relationship

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "no improvement".

**86.** Tom pretended to not **(heard)** a thing.
(1) hear
(2) hearing
(3) be hearing
(4) No Improvement

**87.** He must **(has change)** clothes during the night.
(1) have changed
(2) has changed
(3) have changes
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Deriving pleasure from inflicting pain**
(1) Sadistic
(2) Genial
(3) Tender (4) Placid

**89. A person highly skilled in music**
(1) Virtuoso (2) Amateur
(3) Novice (4) Dabbler

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) palatable (2) palateble
(3) pallateble (4) pallatable

**91.** (1) unnerving (2) unnerveing
(3) unerving (4) unerveing

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. At length, about an hour later, we**
X. spied a little pile of boulders rising
Y. this we dragged ourselves
Z. out of the plain, and to
(1) XYZ (2) ZYX
(3) XZY (4) ZXY

**93. Secondly, it is consistent**
X. with human experience that
Y. places and be depressed in others
Z. land should rise gradually in some
(1) XYZ (2) ZYX
(3) ZXY (4) XZY

**Direction (94) :** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**94. The labourers paved the entire stretch of the road.**
(1) The entire stretch of the road is paved by the labourers.
(2) Paving of the entire stretch of the road was done by the labourers.
(3) The entire stretch of the road was paved by the labourers.
(4) Paving of the entire stretch of the road is done by the labourers.

**Direction (95) :** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**95. The visitor said, "Is your mother at home?"**
(1) The visitor asked me is my mother at home.
(2) The visitor asked to me whether my mother was at home.
(3) The visitor asked to me is my mother at home.
(4) The visitor asked me whether my mother was at home.

**Directions (96–100) :** A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

But before I could be inspired by these amazing people, I had to cleanse my feed. I know my weaknesses : just last week, Facebook memories reminded me of a pizza party I'd had two years ago and I ended up ordering a chicken dominator, with garlic breadsticks and an jalapeno cheese dip. So much for Day One of Couch to 5K training. I stayed right on that couch. So far I've unfollowed Buzzfeed Tasty, TasteMade (even their adorable Tiny Kitchen) and several people who have the enviable advantage of being able to eat as much as they want and not put on weight. By my calculations, dark chocolate is healthy, so I'm still following Earth Loaf, Pascati and Mason & Co.

When I finally found a gym I liked, with the best trainers I have had, I unabashedly shared my workouts every day. From shying away from full–length pictures, I reached a point where I could share videos of myself deadlifting and doing back squats with a barbell across my shoulders. It gave me accountability : I challenged myself to go to the gym for 30 classes straight, and I did it. Which reminds me, it's time to start a new challenge.

**96.** Posts related to which topic does the writer want to remove from her feed?
(1) Dark Chocolate
(2) Make–up
(3) Sari
(4) Food

**97.** What has the writer succeeded in doing?
(1) Lost the desired weight
(2) Succeeded in overcoming temptations to order pizzas
(3) Attended 30 gym classes without a break
(4) Removed unhealthy posts including about chocolates

**98.** Which of the following is a page related to chocolate?
(1) Earth Loaf
(2) Buzzfeed Tasty
(3) TasteMade
(4) Tiny Kitchen

**99.** What weight loss program has the writer enrolled in?
(1) 30 Straight gym classes
(2) Couch to 5K
(3) Mason & Co
(4) Eat chocolate to lose weight

**100.** What gave the writer accountability?
(1) Sharing her workout videos on social media
(2) Unfollowing people and pages not related to health
(3) Going to the gym daily
(4) Doing challenging exercises like deadlifting

## ANSWERS

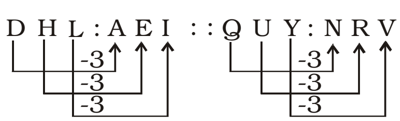
| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (2) | **3.** (3) | **4.** (3) |
| **5.** (4) | **6.** (4) | **7.** (1) | **8.** (1) |
| **9.** (4) | **10.** (1) | **11.** (3) | **12.** (4) |
| **13.** (1) | **14.** (2) | **15.** (2) | **16.** (4) |
| **17.** (1) | **18.** (3) | **19.** (3) | **20.** (1) |
| **21.** (1) | **22.** (2) | **23.** (4) | **24.** (4) |
| **25.** (2) | **26.** (1) | **27.** (2) | **28.** (4) |
| **29.** (1) | **30.** (3) | **31.** (3) | **32.** (2) |
| **33.** (4) | **34.** (2) | **35.** (3) | **36.** (3) |
| **37.** (2) | **38.** (3) | **39.** (2) | **40.** (1) |
| **41.** (4) | **42.** (2) | **43.** (3) | **44.** (3) |
| **45.** (4) | **46.** (2) | **47.** (1) | **48.** (1) |
| **49.** (3) | **50.** (4) | **51.** (2) | **52.** (1) |
| **53.** (1) | **54.** (2) | **55.** (2) | **56.** (1) |
| **57.** (1) | **58.** (2) | **59.** (2) | **60.** (4) |
| **61.** (4) | **62.** (3) | **63.** (2) | **64.** (*) |
| **65.** (4) | **66.** (4) | **67.** (4) | **68.** (3) |
| **69.** (1) | **70.** (3) | **71.** (3) | **72.** (3) |
| **73.** (1) | **74.** (2) | **75.** (4) | **76.** (2) |
| **77.** (3) | **78.** (3) | **79.** (4) | **80.** (2) |
| **81.** (1) | **82.** (4) | **83.** (2) | **84.** (1) |
| **85.** (2) | **86.** (1) | **87.** (1) | **88.** (1) |
| **89.** (1) | **90.** (1) | **91.** (1) | **92.** (3) |
| **93.** (4) | **94.** (3) | **95.** (4) | **96.** (4) |
| **97.** (3) | **98.** (1) | **99.** (2) | **100.** (1) |

## EXPLANATIONS

**1.** (1) Baby of cow is known as calf.

Similarly, by of hen is known as chick.

**2.** (2)




**3.** (3) $(0.5)^3 : (2)^3 :: 0.125 : 8$

**4.** (3) Except 'Pen' all others are made up of papers.

**5.** (4) E $\xrightarrow{+2}$ G $\xrightarrow{+2}$ I

M $\xrightarrow{+2}$ O $\xrightarrow{+2}$ Q

U $\xrightarrow{+2}$ W $\xrightarrow{+2}$ Y

But,

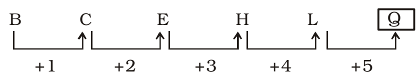
N $\xrightarrow{-2}$ L $\xrightarrow{-2}$ J

**6.** (4) Except '63' all others are prime numbers.

63 = 7 × 9

**7.** (1) Lifeless → Lifelike → Lifeline → Lifelong

**8.** (1)




**9.** (4) –4 + 3 = $\boxed{-1}$

–1 + 4 = 3

3 + 5 = 8

8 + 6 = 14

14 + 7 = 21

**10.** (1) 8th March = Wednesday

Number of days from 8th March to 10th July

= 23 + 30 + 31 + 30 + 10

= 124 days

= 17 Weeks + 5 Days

∴ 10th July = Wednesday + 5 = Monday

**11.** (1) Possible weigtht of combinations of boxes :

(i) 30 + 40 = 70

(ii) 30 + 50 = 80

(iii) 30 + 80 = 110

(iv) 40 + 50 = 90

(v) 40 + 80 = 120

(vi) 50 + 80 = 130

(vii) 30 + 40 + 50 = 120

(viii) 30 + 40 + 80 = 150

(ix) 30 + 50 + 80 = 160

(x) 40 + 50 + 80 = 170

(xi) 30 + 40 + 50 + 80 = 200

**12.** (4) There is no 'M' letter in the given word. Therefore, the word TEAM cannot be formed.

D U $\boxed{\text{P L}}$ I C $\boxed{\text{A T E}}$

⇒ PLATE

$\boxed{\text{D U}}$ P $\boxed{\text{L I C}}$ A $\boxed{\text{T E}}$

⇒ DUCTILE

$\boxed{\text{D}}\boxed{\text{U}}$ P $\boxed{\text{L I C}}$ A T E

⇒ LUCID

**13.** (1)

| P | R | I | M | A | T | E |
|---|---|---|---|---|---|---|
| –3↓ | –3↓ | –3↓ | –3↓ | –3↓ | –3↓ | –3↓ |
| M | O | F | J | X | Q | B |

Therefore,

| C | O | W |
|---|---|---|
| –3↓ | –3↓ | –3↓ |
| Z | L | T |

**14.** (2)

| | |
|---|---|
| + ⇒ × | – ⇒ + |
| × ⇒ ÷ | ÷ ⇒ – |

11 + 50 – 150 ÷ 200 = ?

⇒ ? = 11 × 50 + 150 – 200

⇒ ? = 550 + 150 – 200

⇒ ? = 700 – 200 = 500

**15.** (2) 7 × 1 = (7 –1) × 2

= 6 × 2 = 12

5 × 4 = (5 – 4) × 2

= 1 × 2 = 2

6 × 4 = (6 – 4) × 2

= 2 × 2 = 4

Therefore,

7 × 4 = (7 – 4) × 2

= 3 × 2 = 6

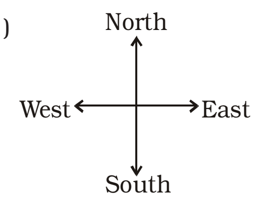
**16.** (4) 18 × 5 = 90

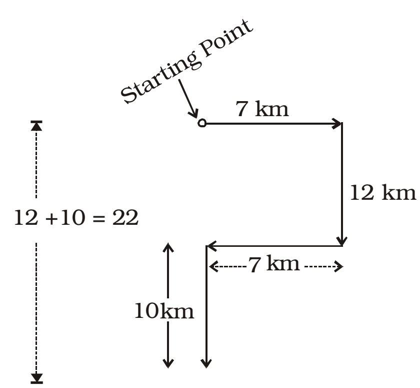
13 × 11 = 143

Therefore,

7 × 5 = 35

**17.** (1)



Now, he is 22 km South from the starting point.

**18.** (3) First Premise is Universal Affirmative (A-type).

Second Premise is Universal Negative (E-type).

All steel is iron.

No iron is solid.

A + E ⇒ E-type of Conclusion "No steel is solid".

This is Conclusion I.

Conclusion II is the Converse of the first Premise.

**19.** (3) After folding the figure :

lies opposite # .

lies opposite .

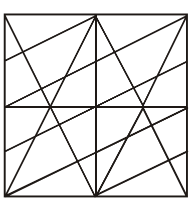
lies opposite .

\# cannot be on the face adjacent to . Therefore, the cube given in the option (3) cannot be formed.

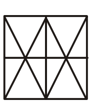
**20.** (1) Athletes who are entrepreneurs can be represented by letters common to the square and the rectangle. Such letters are F and E.

Athletes who are fathers can be represented by letter common to the square and the circle. Such letter is D and E.

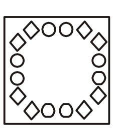
**21.** (1)



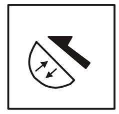
**22.** (2)



**23.** (4)



**24.** (4)



**25.** (2) V = 31

E = 24

R = 11

Y = 55, 59, 87

| Option | V | E | R | Y |
|---|---|---|---|---|
| (1) | 01 | 43 | 21 | 78 |
| (2) | 31 | 24 | 11 | 87 |
| (3) | 11 | 20 | 66 | 85 |
| (4) | 88 | 56 | 43 | 20 |

**26.** (1) An inferior good is a type of good whose demand declines when income rises. In other words, demand of inferior goods is inversely related to the income of the consumer.

**27.** (2) In economics, normal goods are any goods for which demand increases when income increases, and falls when income decreases but price remains constant, i.e. with a positive income elasticity of demand.

**28.** (4) The Concurrent List or List–III (Seventh Schedule) is a list of 52 items (47) given in the Seventh Schedule to the Constitution of India. The Union Government along with the State possesses the power to legislate on the subjects mentioned in the list. The Prevention of cruelty to animals is item number 12 under it.

**29.** (1) Lok Sabha can make laws on matters included in Union List and Concurrent List. The Parliament has the exclusive power to make laws regarding those items which are present in the Union list. In some exceptional circumstances, as specified by the Constitution, it can even legislate on subjects of the State List.

**30.** (3) According to Chola inscriptions, there were five types of 'land gifts' that Chola kings gave to their people :

- vellanvagai was land for non-Brahmana, peasant proprietors
- brahmadeya was land gifted to Brahmanas
- shalabhoga was land for the maintenance of a school
- devadana/tirunamattukkani was land gifted to temples
- pallichchhandam was land donated to Jaina institutions

**31.** (3) Jahangir (1605-1627) was the fourth Mughal emperor, son of Akbar. Nuruddin Muhammad Salim was his real name. Jahangir established direct relations between the Mughal Government and the East India Company. In 1615, Sir Thomas Roe arrived as an accredited ambassador or James I to the Mughal Court.

**32.** (2) Weathering is the breakdown of rocks at the Earth's surface, by the action of rainwater, extremes of temperature, and biological activity. Erosion is the process by which soil and rock particles are worn away and moved elsewhere by wind, water or ice. Weathering involves no moving agent of transport.

**33.** (4) The natural or manmade sources, which can dissipate or deflect the potential wind and wave energy and protect the coastal life and properties from the calamities, are called as coastal shelterbelt. Since cyclones and tsunamis mostly originate from the sea and move towards the land, the wind generated reduced, reflected, deflected and dissipated, when they pass through obstacles such as coastal forest, mangroves, offshore islands, coral reefs, head lands, sea cliffs, sand pits, mud flats, sand dunes, creeks etc.

**34.** (2) The binomial nomenclature used for animals and plants is largely derived from Latin and Greek words, as are some of the names used for higher taxa, such as orders and above. At the time when biologist Carl Linnaeus (1707–1778) published the books that are now accepted as the starting point of binomial nomenclature, Latin was used in Western Europe as the common language of science, and scientific names were in Latin or Greek : Linnaeus continued this practice.

**35.** (3) The scientific name of Red Algae is Rhodophyta and they belong to Class Rhodophyceae. There are two classes of red algal namely the Florideophyceae and Bangiophyceae. Both Florideophyceae and Bangiophyceae comprise 99% of red algal diversity in marine and freshwater habitats.

**36.** (3) Coelenterates are multicellular animals with tissue grade of organisation. They are aquatic, mostly marine except few freshwater forms like Hydra. They exhibit the phenomenon of polymorphism with very few exceptions; the main types of zooids in polymorphic forms are polyps and medusa. Polyp is sessile and asexual zooid, while medusa is free-swimming and sexual zooid.

**37.** (2) Some types of energy losses :

- Heat energy, potentially as a result of air drag or friction. Heat energy is the most easily dissipated form of energy.
- Light energy is frequently energy seen in combustion, and is a type of wave motion.
- Sound energy is another type of wave motion caused by the vibration of molecules in the air. Like heat energy, sound is a type of energy that is generally lost.

**38.** (3) The angle formed between the normal and the incident ray at the point of incidence is called the angle of incidence. Similarly, the angle formed between the normal and the reflected ray at the point of incidence is called the angle of reflection. The angle of incidence and the angle of reflection is always equal and they are both on the same plane along with the normal.

**39.** (2) When referring to text, indent or indentation is the increase or decrease of space between the left and right margin of a paragraph. In Microsoft Word, increase indent allows us to move selected paragraphs to the right.

**40.** (1) Copper sulfate is an inorganic compound that combines sulfur with copper. Older names for this compound include blue vitriol, bluestone, vitriol of copper and Roman vitriol. Anhydrous copper sulfate is a white powder.

**41.** (4) When a match strikes on striking surface, the heat of the friction causes a reaction between the potassium chlorate in the match head and the red phosphorus in the striking surface. The rubbing surface has powdered glass and an adhesive such as gum arabic or urea formaldehyde.

**42.** (2) A eurytherm is an organism, often specifically an ectotherm, that can function at a wide range of body temperatures. Examples of Eurytherms include desert pupfish, which can function in waters from 4° to 45°C and green crabs (Carcinus maenas).

**43.** (3) The Ek Bharat Shreshtha Bharat programme was launched by the Prime Minister on 31st October, 2016 to promote engagement amongst the people of State/ UTs in the country so as to enhance mutual understanding and bonding between people of diverse cultures, thereby securing stronger unity & integrity of India.

**44.** (3) George de Mestral was a Swiss engineer best known as the inventor of Velcro. He was inspired to invent Velcro after examining burrs clinging to his clothing after a hiking trip. He began developing the fabric in 1948 and completed work in 1955, patenting his invention the same year.

**45.** (4) The 2018 FIFA World Cup will be the 21st FIFA World Cup, a quadrennial international football tournament contested by the men's national teams of the member associations of FIFA. It is scheduled to take place in Russia from 14 June to 15 July 2018,

**46.** (2) Charminar, which is synonymous with Hyderabad is one of the magnificent structures built by Mohammad Quli Qutub Shah, the Qutub Shahi dynasty of the fifth ruler and also the founder of the city, in Hijri 1000 (AD1591-92). The notable feature of Charminar is the location of a mosque on the western section of the second floor, probably one of the most beautiful of this period. There are forty-five mushallas (prayer spaces) with an open courtyard in front.

**47.** (1) The Ashoka Chakra is awarded for most conspicuous bravery or some act of daring or pre-eminent act of valour or self-sacrifice otherwise than in the face of the enemy. It ranks equivalent to Param Vir Chakra in military and in the league of peacetime gallantry awards comes before the Kirti Chakra and Shaurya Chakra awards.

**48.** (1) Accelerando is a 2005 science fiction novel by Charles Stross

- The Windup Girl is a cience fiction novel by American writer Paolo Bacigalupi.
- The Devil in Silver : A Novel is authored by Victor LaValle

**49.** (3) German scientists switched on "the world's largest artificial sun". The Synlight experiment in Jülich, about 19 miles west of Cologne, consists 149 souped-up film projector spotlights and produces light about 10,000 times the intensity of natural sunlight on Earth. The aim of the experiment is to come up with the optimal setup for concentrating natural sunlight to power a reaction to produce hydrogen fuel.

**50.** (4) Bangladesh is bordered by the Indian states of West Bengal to the west and north, Assam to the north, Meghalaya to the north and northeast and Tripura and Mizoram to the east. To the southeast, it shares a boundary with Myanmar (Burma). The southern part of Bangladesh opens into the Bay of Bengal.

**51.** (2) Dividing 329 by 7, remainder = 0

By adding 0 to 329, it is completely divisible by 7.

**52.** (1) A and B working together will do 1 work in = $\frac{xy}{x+y}$

$= \frac{15 \times 30}{15+30} = 10$ days

$\therefore$ Time taken in doing 50% of work = $\frac{1}{2}$

$= 10 \times \frac{1}{2} = 5$ days

**53.** (1) Area of the equilateral triangle

$= \frac{\sqrt{3}}{4} \times (\text{Side})^2$

$= \frac{\sqrt{3}}{4} \times (10)^2$

$= \frac{\sqrt{3}}{4} \times 100$

$= 25\sqrt{3}$ sq.cm.

**54.** (2) Effective discount per cent

$= \left(x + y - \frac{xy}{100}\right)\%$

$= \left(15 + 50 - \frac{15 \times 50}{100}\right)\%$

$= (65 - 7.5)\% = 57.5\%$

**55.** (2) A : B : C = 3 : 5 : 9

$\therefore$ A's share

$= \text{Rs.} \left(\frac{3}{3+5+9} \times 42{,}500\right)$

$= \text{Rs.} \left(\frac{3}{17} \times 42{,}500\right)$

= Rs. 7500

**56.** (1) Total weight of A, B and C

$= 3 \times 49 = 147$ kg.

Total weight of A and B

$= 2 \times 35 = 70$ kg.

Weight of C $= 147 - 70$

$= 77$ kg.

Total weight of B and C

$= 62 \times 2 = 124$ kg.

$\therefore$ Weight of B $= 124 - 77$

$= 47$ kg.

**57.** (1) C.P. = Rs. 5

S.P. = Rs. 6

Profit per cent

$= \frac{6-5}{5} \times 100$

$= \frac{1}{5} \times 100 = 20\%$

**58.** (2) 125% of 25% of 80

$= 80 \times \frac{25}{100} \times \frac{125}{100} = 25$

**59.** (2) Average speed

$= \frac{\text{Total distance}}{\text{Time taken}}$

$= \left(\frac{81}{1.5} \times \frac{5}{18}\right)$ m/sec.

= 15 m/s

**60.** (4) Rate $= \frac{\text{S.I.} \times 100}{\text{Time} \times \text{Principal}}$

$= \frac{32 \times 100}{4 \times 100} = 8\%$

$A = P\left(1 + \frac{r}{100}\right)^T$

$= 24000\left(1 + \frac{8}{100}\right)^3$

$= 24000 \times \frac{108}{100} \times \frac{108}{100} \times \frac{108}{100}$

= Rs. 30133.08

C.I. = Rs. (30233–24000)

= Rs. 6233

**61.** (4) $\frac{5}{2}\left(\frac{8x}{3} - \frac{1}{2}\right) + \frac{13}{2} = \frac{2x}{3}$

$\Rightarrow \frac{5}{2}\left(\frac{16x-3}{6}\right) + \frac{13}{2} = \frac{2x}{3}$

$\Rightarrow \frac{80x-15}{12} - \frac{2x}{3} = -\frac{13}{2}$

$\Rightarrow \frac{80x-15-8x}{12} = -\frac{13}{2}$

$\Rightarrow 72x - 15 = -78$

$\Rightarrow 72x = -78 + 15$

$\Rightarrow x = \frac{-63}{72} = \frac{-7}{8}$

**62.** (3) $a^3 + b^3 = 72$, $ab = 8$

$\therefore a^3 + b^3 = (a+b)^3 - 3ab(a+b)$

$72 = (a+b)^3 - 3 \times 8(a+b)$

$72 = (a+b)^3 - 24(a+b)$

When

$= a + b = 6$

L.H.S. $= 6^3 - 24 \times 6$

$= 216 - 144 = 72 =$ R.H.S.

**63.** (2) Let the fraction be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$4x + \frac{7}{x} = 16$

$\Rightarrow 4x^2 - 16x + 7 = 0$

$\Rightarrow 4x^2 - 2x - 14x + 7 = 0$

$\Rightarrow 2x(2x-1) - 7(2x-1) = 0$

$\Rightarrow (2x-1)(2x-7) = 0$

$\Rightarrow 2x - 1 = 0$

$\Rightarrow x = \frac{1}{2}, 2x - 7 = 0$

$\Rightarrow x = \frac{7}{2}$

**64.** (*) Let the first term of A.P. be $a$ and $d$ be the common difference.

$\therefore a_n = a + (n-1)d$

$\Rightarrow a + 2d = -1$ ...(i)

$a + 7d = 19$ ...(ii)

Equation (i) – (ii),

$a + 2d = -1$
$a + 7d = 19$
$-\quad -\quad\quad -$
$-5d = -20$

$\Rightarrow d = 4$

$\therefore a + 2d = -1$

$\Rightarrow a + 2 \times 4 = -1$

$\Rightarrow a = -1-8 = -9$

Sum of first 11 terms

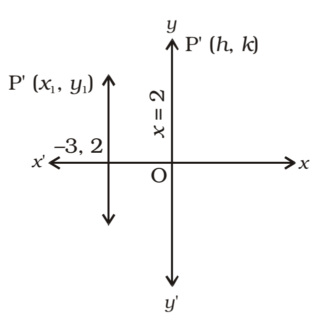
$= \frac{11}{2}[2(-9) + (11-1)4]$

$\left[\because S_n = \frac{n}{2}[2a + (n-1)d]\right]$

$= \frac{11}{2}[-18 + 40]$

$= \frac{11}{2} \times 22 = 11 \times 11 = 121$

**65.** (4)




$k$ remains same.

Reflection of point (–3, 2) in the line $x = -2$ :

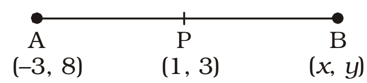
$(h - x_1) = -2(x_1 - x)$

$\Rightarrow \frac{h+3}{1} = \frac{-2(-3+2)1}{1}$

$\Rightarrow h + 3 = 2 \Rightarrow h = 2 - 3 = -1$

Reflection = (–1, 2)

**66.** (4)




P is midpoint of line segment AB.

$\therefore \frac{-3+x}{2} = 1$

$\Rightarrow x = 2 + 3 = 5$ and

$\frac{8+y}{2} = 3 \Rightarrow y = 6 - 8 = -2$

Co-ordinates of point B

= (5, –2)

**67.** (4) The slope of the line passing through the points (3,–2) and (4, 2) $= \frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{2+2}{4-3} = 4$

Slope of the line perpendicular to this line

$= -\frac{1}{4}$ $[\because m_1 m_2 = -1]$

**68.** (3) $\Delta ABC \sim \Delta PQR$

$\frac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta PQR}$

$= \frac{\text{Length of AB}}{\text{Length of PQ}}$

$\Rightarrow \frac{3}{7} = \frac{AB}{21}$

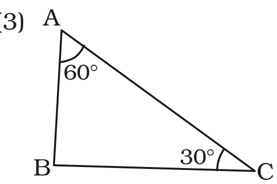
$\Rightarrow AB = \frac{21 \times 3}{7} = 9$ cm.

**69.** (1) 2 sec 45° + tan 30°

$= 2 \times \sqrt{2} + \frac{1}{\sqrt{3}}$

$= \frac{2\sqrt{6}+1}{\sqrt{3}}$

**70.** (3)




cot C = cot 30° = $\sqrt{3}$

**71.** (3) $\text{cosec}\theta = \frac{25}{7}$

$\therefore \sin\theta = \frac{7}{25}$

$\therefore \cos\theta = \sqrt{1 - \sin^2\theta}$

$= \sqrt{1 - \left(\frac{7}{25}\right)^2} = \sqrt{1 - \frac{49}{625}}$

$= \sqrt{\frac{625-49}{625}} = \sqrt{\frac{576}{625}} = \frac{24}{25}$

**72.** (3) If candidate A is disqualified, then candidate F will be declared the winner because F gets second highest number of votes.

**73.** (1) Required number of votes = 27000 – 21000 = 6000

**74.** (2) If candidate E had not stood in the fray then votes polled for F = $21000 + \frac{16000}{2}$

= 21000 + 8000 = 29000

So, candidate F would have won by = 29000 – 27000 = 2000 votes

**75.** (4) If voting attendance = 60%, then number of names in voter list = 90000

If voting attendance be 100% then number of voters in the

voter list = $\frac{90000}{60} \times 100$

= 150000

**76.** (2) Use 'across' in place of **cross**.

**Across (preposition)** = from one side to the other side of something

**77.** (3) **Among (preposition)** = used for suggesting that there are more than two persons/ things

**Inside (preposition)** = within (a person's body or mind)

So, correct expression ⇒ going on inside his head

**78.** (3) **Numerous (Adjective)** = several; umpteen.

**Lone (Adjective)** = solitary; single; solo.

**Singular/unique (Adjective)** = remarkable; extraordinary.

**79.** (4) **Simile (Noun)** = a figure of speech involving the comparsion.

**Metaphor (Noun)** = figurative expression, imagery; allegory.

**Alliteration (Noun)** = occurnence of the same letter/ sound at the beginning of some words.

**Oxymoron (Noun)** = a figure of speech in which controdictory terms appear in conjunction.

**80.** (2) **Cynicism/bitterness (Noun)** = doubt, disillusion.

**Look at the sentence :**

Public cynicism about politics.

**Credence/conviction (Noun)** = strong belief; thought.

**Intuition (Noun)** = instinct, sixth sense.

**81.** (1) **Pinnacle/culmination (Noun)** = highest level; summit.

**Look at the sentence :**

He had reached the pinncale of his career.

**Nadir (Noun)** = the lowest point.

**Basal/nethermost (Adjective)** = lowemost, lowest.

**82.** (4) **Befuddle/baffle/doze/ fluster (Verb)** = confuse, muddle.

**Look at the sentence :**

His befuddled brain refused to accept that there was a problem.

**Explicate (Verb)** = explain in detail; clarify.

**Look at the sentence :**

He explicated the relationship between crime and economic forces.

**83.** (2) **Supersede/supplant (Verb)** = take the place of.

**Look at the sentence :**

Domestic prouction has been supplanted by imposts.

**Surrender (Verb)** = yield; give in.

**Look at the sentence :**

He surrender all his wealth to the robbers.

**Usurp (Verb)** = seize; take ever; wrest.

**Oust (Verb)** = drive out; expel; force out.

**84.** (1) **Understand what is implied by a remark or action**

**Look at the sentence :**

OK, I get the message. I will start looking for somewhere else to stay.

**85.** (2) **To control something and prevent it from causing you problems.**

**Look at the sentence :**

She fought to keep her unhappiness at bay.

**86.** (1) 'to' is followed by $V_1$, which is called to–infinitive.

⇒ to study, to hear, to speak, to talk

**87.** (1) **must have done something** – used for believing that the listener has done as the speaker told him.

**Look at the sentence :**

You must have watched him on TV.

must ⇒ followed by $V_1$ (have) and have is followed by $V_3$ (changed), *i.e.*

must + have ($V_1$) + changed ($V_3$)

**88.** (1) **Placid (Adjective)** = calm and peaceful.

**Tender (Adjective)** = soft.

**Genial (Adjective)** = cordial; congenial; amiable; friendly.

**89.** (1) **Dabbler/novice (Noun)** = beginner; learner.

**Amateur (Noun)** = non-professional; non-specialist; laynear.

**90.** (1) **palatable** (= tasty)

**91.** (1) **unnerving** (= frightening)

**94.** (3) The entire stretch of the roads was paved by the labourers.

It is active voice of simple past tense.

It passive voice is formed as follows :

Subject + was/were + $V_3$ + by + obj....

**95.** (4) The visitor asked whether my mother was at home.

It is direct speech of an interrogative sentence. Its indirect speech is formed as follows :

⇒ Connector if/whether is used

⇒ 'said to' changes to asked

⇒ simple present (is) changes to simple past (was)

⇒ Pronouns change as per $\frac{\text{SON}}{123}$

⇒ The interrogative sentence changes to the assertive sentence.

❑❑❑

SET 36

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 21.08.2017 (Shift-II)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Pencil : Lead :: Pen : ?
(1) Ball (2) Write
(3) Blue (4) Ink

**2.** Select the related letters from the given alternatives :
DGI : JMO :: RUW : ?
(1) XAC (2) WYZ
(3) ACE (4) ZAC

**3.** Select the related number from the given alternatives :
236 : 472 : : 123 : ?
(1) 246 (2) 426
(3) 642 (4) 247

**4.** Select the odd word from the given alternatives :
(1) Car (2) Jeep
(3) Van (4) Cycle

**5.** Select the odd letters from the given alternatives :
(1) WVU (2) QPO
(3) GED (4) LKJ

**6.** Select the odd number from the given alternatives :
(1) 13 (2) 17
(3) 21 (4) 23

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
Laugh, Alter, Melts, Realm, Muesli, ?
(1) Missile (2) Shall
(3) Alien (4) Rifle

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
E, H, L, O, S, ?
(1) U (2) W
(3) V (4) X

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :
99, 90.7, 82.4, ? , 65.8, 57.5
(1) 73.3 (2) 74.8
(3) 75.2 (4) 74.1

**10.** Akarsh's birthday is on Saturday 29th July. On what day of the week will be Ojas's birthday in the same year if Ojas was born on 12th August?
(1) Wednesday
(2) Friday
(3) Saturday
(4) Sunday

**11.** The weights of 4 boxes are 30, 70, 60 and 20 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 180 (2) 190
(3) 120 (4) 150

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**JOSTLING**
(1) INLET (2) GLINT
(3) INGOT (4) JINGO

**13.** If PROJECT is coded as KILQVXG, then how will EGO be coded as?
(1) VPU (2) MJN
(3) VTL (4) SGD

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
75 – 5 + 25 ÷ 125 = ?
(1) 5 (2) 10
(3) 3 (4) 75

**15.** If 15 @ 7 = 44; 5 @ 4 = 18; 6 @ 17 = 46; then what is the value of 17 @ 4 = ?
(1) 36 (2) 42
(3) 40 (4) 49

**16.** Select the missing number from the given responses :

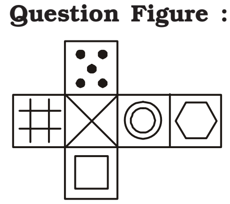
| 116 | 94 | 135 |
|---|---|---|
| 21 | ? | 87 |
| 95 | 47 | 48 |

(1) 48 (2) 47
(3) 144 (4) 94

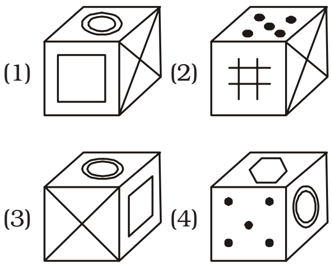
**17.** A car travels 17 km South, then turns East and travels 11 km, then turns North and travels 9 km, then turns to its left and travels 11 km. Where is the car now with reference to its starting position?
(1) 8 km North
(2) 8 km South
(3) 26 km South
(4) 26 km North

**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
**Statements :**
No shirts are T-shirts.
All T-shirts are cotton.
**Conclusions :**
I. Some shirts are cotton.
II. No T-shirts is shirt.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

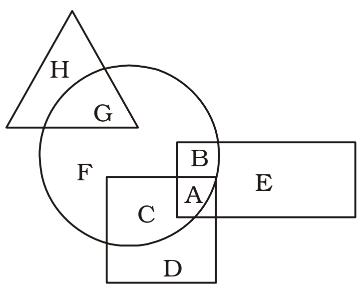
**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure ?
**Question Figure :**



**Answer Figures :**



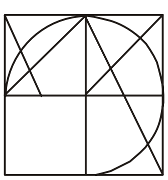
**20.** In the following figure, square represents Artists, triangle represents Military officers, circle represents collectors and rectangle represents Fathers. Which set of letters represents collectors who are either military officers or fathers ?



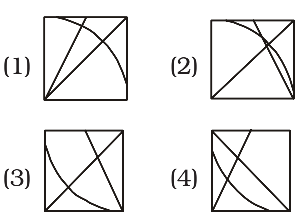

(1) F, C (2) D, E
(3) A, B, G (4) H, E, D

**21.** Which answer figure will complet the pattern in the question figure ?

**Question Figure :**

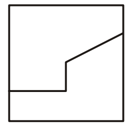


**Answer Figures :**

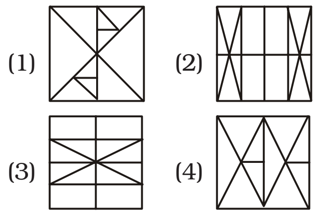


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

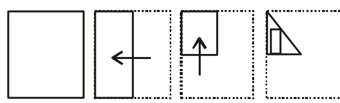


**Answer Figures :**

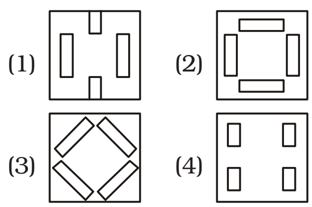


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

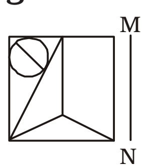


**Answer Figures :**

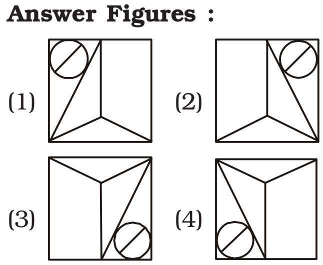


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its colum, for example 'K' can be represented by 41, 34 etc. and 'Z' can be represented by 75, 86 etc. Similarly, you have to identify the set for the word **'PAWN'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | L | E | D | E | A |
| 1 | H | J | C | M | J |
| 2 | B | L | I | A | I |
| 3 | L | E | B | H | K |
| 4 | F | K | G | D | J |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | R | Z | Q | R | N |
| 6 | Y | U | Y | T | O |
| 7 | Z | R | W | T | S |
| 8 | X | Z | O | S | Z |
| 9 | U | O | Y | O | P |

(1) 44, 10, 87, 55
(2) 99, 23, 77, 59
(3) 03, 40, 86, 65
(4) 31, 31, 59, 66

## GENERAL AWARENESS

**26.** The demand for a inferior good increases with ________ in the consumer's income.
(1) increase (2) decrease
(3) constant (4) do uble

**27.** Goods for which demand move in the opposite direction of the income of the consumer are called?
(1) Inferior goods
(2) Normal goods
(3) Complementary goods
(4) Substitute goods

**28.** "Population control and family planning" is listed in the __________ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** _______ is issued when the court finds that a particular office holder is not doing legal duty and thereby is infringing on the right of an individual.
(1) Habeas Corpus
(2) Mandamus
(3) Prohibition
(4) Quo Warranto

**30.** According to the categories of land mentioned in the Chola inscriptions __________ was known as the land donated to Jaina institutions?
(1) Vellanvagai
(2) Brahmadeya
(3) Shalabhoga
(4) Pallichchhandam

**31.** Prince Khurram was the name of the future Emperor
(1) Shah Jahan
(2) Jahangir
(3) Babur (4) Akbar

**32.** ________ are defined as the mass movement of rock, debris or earth down a slope.
(1) Earthquake
(2) Cyclone (3) Flood
(4) Landslide

**33.** The material carried by the glacier such as rocks big and small, sand and silt gets deposited, which are called glacial _______.
(1) moraines (2) deltas
(3) plateaus (4) grooves

**34.** Based on the common features like presence of notochord and dorsal hollow neural system, animals like fishes, amphibians, reptiles, birds along with mammals are included in which Phylum?
(1) Mammalia (2) Chordata
(3) Primata (4) Insecta

**35.** The members of phaeophyceae are commonly called ______ algae.
(1) Green (2) Brown
(3) Red (4) Yellow

**36.** Asterias (Star fish), Echinus (Sea urchin), Antedon (Sea Lily) are all examples of which Phylum?
(1) Echinod ermata
(2) Annelida
(3) Platyhelminthes
(4) Arthropoda

**37.** During uniform motion of an object along a straight line, the ________ remains constant with time.
(1) Time
(2) Velocity
(3) Acceleration
(4) Distance

**38.** The impression of an image persists on the retina for about ________ of a second.
(1) $\frac{1}{10}$th (2) $\frac{1}{8}$th
(3) $\frac{1}{16}$th (4) $\frac{1}{5}$th

**39.** In Microsoft Word, ______ allows us to move selected paragraphs to the left.
(1) Decrease Indent
(2) Increase Indent
(3) Double Indent
(4) Single Indent

**40.** Acetic Acid is another name for which of the following?
(1) Vinegar
(2) Baking Soda
(3) Copper Sulphate
(4) Magnesium Oxide

**41.** The reaction of Copper Sulphate and Iron produces Iron Sulphate and _________.
(1) Vinegar
(2) Ash
(3) Baking Soda
(4) Copper

**42.** A few organisms can tolerate and thrive in a narrow range of temperatures. Such organisms are called __________.
(1) Osmotic
(2) Eurythermal
(3) Stenothermal
(4) Hydrothermal

**43.** _______ scheme was launched by the Central Government in the state of Bihar to provide clean water of the Ganges to domestic areas via postal services.
(1) Gangajal Delivery Scheme
(2) Mission Bhagiratha In Telangana
(3) National Apprenticeship Promotion
(4) Railway Travel Insurance

**44.** Who discovered Electron?
(1) Enrico Fermi
(2) Robert Noyce
(3) J.J. Thomson
(4) James Dyson

**45.** Which country won the 2016 Men's Kabaddi World Cup?
(1) India (2) Thailand
(3) Pakistan (4) Iran

**46.** Mattancherry Palace is located in?
(1) West Bengal
(2) Kerala
(3) Rajasthan
(4) Karnataka

**47.** Which of the following is an award given by the Government of India to recognize outstanding achievement in National sports?
(1) Ashok Chakra
(2) Dada Saheb Phalke Awards
(3) Arjuna Award
(4) Padma Shri

**48.** Which of the statements given below are not correct?
1. The author of the novel 'A Visit from the Goon Squad' is Edward P. Jones.
2. The author of the novel 'The Corrections' is Jonathan Franzen.
3. The author of the novel 'The Known World' is Jennifer Egan.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** In April 2017, the G20 Digital Ministerial Meeting on Digital Economy was held in which country?
(1) Italy (2) Ge rmany
(3) France (4) USA

**50.** Which is the only train which runs between Kolkata and Dhaka?
(1) Dosti Express
(2) Maitree Express
(3) Bangla Express
(4) Padma Express

## QUANTITATIVE APTITUDE

**51.** Select the correct option : Convert decimal 99 to binary.
(1) 1100101
(2) 1101001
(3) 11100011
(4) 1100011

**52.** Anil is twice as good a workman as Bimal and together they finish a piece of work in 9 days. In how many days will Anil alone finish the work?
(1) 12.5 (2) 11.5
(3) 10.5 (4) 13.5

**53.** What is the area (in sq. cm.) of a circle whose circumference is 22 cm?
(1) 77 (2) 38.5
(3) 44 (4) 88

**54.** The cost price of an article is Rs. $x$. It is marked up by 150%. It is sold at Rs. 600 after giving 40% discount. What is $x$ (in Rs.)?
(1) 400 (2) 666
(3) 300 (4) 444

**55.** A bag has Rs. 51.25 in the form of 2-rupee, 50-paise and 25-paise coins in the ratio of 3 : 5 : 7. What is the total number of 50-paise coins?
(1) 15 (2) 35
(3) 25 (4) 5

**56.** In the first 40 overs of a 50 over innings, the run rate was 4.8 runs/over. What is the required run rate in the remaining 10 overs to reach the target of 241 runs?
(1) 6.7 (2) 6.5
(3) 6.3 (4) 4.9

**57.** A milkman buys milk at Rs. 25 per litre and adds $\frac{1}{4}$ of water to it and sells the mixture at Rs. 26 per litre. His gain (in %) is
(1) 25 (2) 20
(3) 30 (4) 15

**58.** When a number is increased by 120, it becomes 130% of itself. What is the number?
(1) 400 (2) 520
(3) 460 (4) 580

**59.** Two cyclists P and Q cycle at 20 km/hr and 25 km/hr towards each other. What was the distance (in km.) between them when they started if they met after 56 minutes?
(1) 36 (2) 39
(3) 42 (4) 45

**60.** The amount received at 10% per annum compound interest after 3 years is Rs. 5324. What was the principal (in Rs.)?
(1) 4100 (2) 4200
(3) 4000 (4) 4300

**61.** If $\frac{14}{3}+\left(\frac{1}{2}\right)\left(x-\frac{7}{3}\right)=-\frac{2x}{3}$, then the value of $x$ is
(1) –3 (2) 3
(3) 6 (4) –6

**62.** If $a + b = 10$ and $ab = 24$, then what is the value of $(a^3 + b^3)$ ?
(1) 280 (2) 152
(3) 140 (4) 72

**63.** The sum of a fraction and three times its reciprocal is $\frac{19}{4}$. What is the fraction?
(1) $\frac{3}{4}$ (2) $\frac{4}{3}$
(3) $\frac{5}{4}$ (4) $\frac{4}{5}$

**64.** The 3rd and 6th term of an arithmetic progression are 13 and -5 respectively. What is the 11th term?
(1) –29 (2) –41
(3) –47 (4) –35

**65.** What is the reflection of the point (6, –1) in the line $y = 2$?
(1) (–2, –1) (2) (–6, 5)
(3) (6, 5) (4) (–2, 1)

**66.** Point P (8, 5) is the midpoint of segment AB. The co-ordinates of A are (5, $y$) and that of B are ($x$, –3). What is the value of $x$?
(1) –11 (2) 11
(3) 7 (4) –7

**67.** What is the equation of a line of slope $\frac{1}{3}$ and $y$-intercept 5?
(1) $x - 3y = -15$
(2) $x - 3y = 15$
(3) $x + 3y = -15$
(4) $x + 3y = 15$

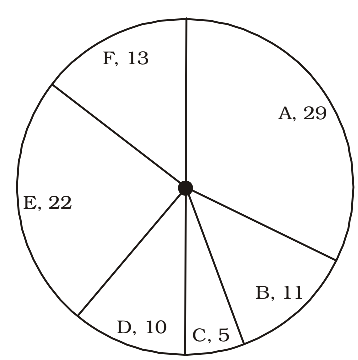
**68.** ΔABC is right angled at B. BD is an altitude. AD = 3 cm and DC = 9 cm. What is the value of AB (in cm.)?
(1) 6 (2) 5
(3) 4.5 (4) 5.5

**69.** What is the value of cot 60° – sec 45° ?
(1) $\frac{(\sqrt{2}-\sqrt{3})}{\sqrt{6}}$
(2) $\frac{(\sqrt{3}-3\sqrt{2})}{3}$
(3) $\frac{(1-2\sqrt{2})}{2}$
(4) $\frac{(1-\sqrt{3})}{2}$

**70.** ΔABC is right angled at B. If m∠A = 30°, what is the length of AB (in cm), if AC = 10 cm. ?
(1) 5 (2) $5\sqrt{3}$
(3) $10\sqrt{3}$ (4) 10

**71.** If $\cot\theta = \frac{24}{7}$, then $\sin\theta$ = ?
(1) $\frac{24}{25}$ (2) $\frac{8}{25}$
(3) $\frac{7}{25}$ (4) $\frac{9}{25}$

**Directions (72–75) :** The pie chart shows the share of tiger population in six Wild — life sanctuaries (A, B, C, D, E and F) of a country. Study the diagram and answer the following questions.



**72.** Which wild-life sanctuary has more tigers than D but less than F?
(1) C (2) A
(3) E (4) B

**73.** What will be the total number of tigers left in the six sanctuaries, if 3 tigers are killed by poachers in sanctuary E and 9 tigers are added to sanctuary A?
(1) 93 (2) 96
(3) 99 (4) 95

**74.** What is the ratio of the number tigers in sanctuaries E and F to that of tigers in sanctuaries D and C?
(1) 3 : 7 (2) 7 : 3
(3) 5 : 2 (4) 2 : 5

**75.** If the total tiger population in these six sanctuaries had grown by 20% and 25% in the previous two decades, then what was the total tiger population in these six sanctuaries 20 years ago ?
(1) 135 (2) 150
(3) 60 (4) 45

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** Economically, we (1)/ understand the world (2)/ round us in terms of scarcity. (3)/No Error (4)

**77.** The two children, (1)/ brother and sister, were onto (2)/ their way to school. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Finding the comedy routine extremely funny, the family laughed _______ along with the rest of the crowd.
(1) lot (2) hysterically
(3) crazy (4) guffaw

**79.** The detective's ability to ________ makes it easy for him to scare suspects into confessing.
(1) bluff (2) stuff
(3) enough (4) cough

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Belligerent**
(1) Antagonistic
(2) Co-operative
(3) Dandy
(4) Delightful

**81. Indiscreet**
(1) Careless (2) Accurate
(3) Attentive (4) Choosy

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Incentive**
(1) Impetus
(2) Stimulus
(3) Enticement
(4) Hindrance

**83. Benediction**
(1) Criticism
(2) Invocation
(3) Beatitude
(4) Approbation

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To go off the air**
(1) To remove ventilator of a patient on his death bed
(2) To eat no food for a long period of time
(3) To stop broadcasting a radio or TV programme
(4) To waste time on silly or trivial things.

**85. To make a fuss about**
(1) To be extremely delighted
(2) To work hard for eventual success
(3) To be very strict or have very high standards
(4) An excessive display of attention or activity

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** I should **(has to be)** with them tonight.
(1) has been
(2) have been
(3) been
(4) No Improvement

**87.** He must not **(to be left)** like this.
(1) being left
(2) been left
(3) be left
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Free from disturbance**
(1) Tranquil (2) Agitated
(3) Chaotic (4) Violent

**89. An arrangement of flowers fastened in a ring used for laying on a grave**
(1) Brier (2) Prickle
(3) Wreath (4) Splint

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) possesses (2) posseses
(3) posesses (4) poseses

**91.** (1) murmuring
(2) murmurring
(3) murrmuring
(4) murrmurring

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. There was no need to**
X. set a watch, for we had nothing
Y. to fear from anybody or
Z. anything in that vast untenanted plain
(1) ZYX (2) ZXY
(3) YZX (4) XYZ

**93. This idea, however startling it may at**
X. first appear, is quite in accordance, as
Y. before stated, with the analogy of changes
Z. now going on in certain regions of the globe

(1) ZYX (2) XYZ
(3) ZXY (4) YZX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**He mailed his application for a new job.**

(1) The application for a new job is mailed by him.
(2) The application for a new job was mailed by him .
(3) He is the mailer of the application for a new job.
(4) He was the mailer of the application for a new job.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**"Ooh! what a dirty child!" said my aunt.**

(1) My aunt exclaimed disgustedly what a dirty child.
(2) My aunt exclaimed disgustedly that the child is very dirty.
(3) My aunt exclaimed disgustedly that the child was very dirty.
(4) My aunt exclaimed disgustedly what a dirty child it is.

**Directions (96–100) :** A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Genetic variation is the cornerstone of evolution, without which there can be no natural selection, and so a low genetic diversity decreases the ability of a species to survive and reproduce, explains lead author Yoshan Moodley, Professor at the Department of Zoology, University of Venda in South Africa.

Two centuries ago, the black rhinoceros – which roamed much of sub Saharan Africa – had 64 different genetic lineages; but today only 20 of these lineages remain, says the paper. The species is now restricted to five countries, South Africa, Namibia, Kenya, Zimbabwe and Tanzania. Genetically unique populations that once existed in Nigeria, Cameroon, Chad, Eritrea, Ethiopia, Somalia, Mozambique, Malawi and Angola have disappeared. The origins of the 'genetic erosion' coincided with colonial rule in Africa and the popularity of big game hunting. From the second half of the 20th century, however, poaching for horns has dramatically depleted their population and genetic diversity, especially in Kenya and Tanzania.

**96.** What is important for evolution?
(1) Genetic variation
(2) Large population
(3) Mixing of species
(4) Survival of the fittest

**97.** Sub Sharan Africa has lost how many black rhino genetic lineages in 200 years?
(1) 64 (2) 20
(3) 44 (4) 30

**98.** Genetically unique black rhinoceros has been lost in all of the following countries, except?
(1) Tanzania (2) Nigeria
(3) Chad (4) Malawi

**99.** From the second half of the 20th century what has caused a dramatic fall in black rhinoceros population?
(1) poaching
(2) colonial rule
(3) big game hunting
(4) fall in genetic diversity

**100.** Genetic diversity is proportional to ___________.
(1) species population
(2) the ability of a species to survive and reproduce
(3) inbreeding
(4) extinction

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (1) | **3.** (1) | **4.** (4) |
| **5.** (3) | **6.** (3) | **7.** (1) | **8.** (3) |
| **9.** (4) | **10.** (3) | **11.** (2) | **12.** (1) |
| **13.** (3) | **14.** (4) | **15.** (2) | **16.** (2) |
| **17.** (2) | **18.** (2) | **19.** (1) | **20.** (3) |
| **21.** (3) | **22.** (3) | **23.** (2) | **24.** (2) |
| **25.** (2) | **26.** (2) | **27.** (1) | **28.** (4) |
| **29.** (2) | **30.** (4) | **31.** (1) | **32.** (4) |
| **33.** (1) | **34.** (1) | **35.** (2) | **36.** (1) |
| **37.** (2) | **38.** (3) | **39.** (1) | **40.** (1) |
| **41.** (4) | **42.** (3) | **43.** (1) | **44.** (3) |
| **45.** (1) | **46.** (2) | **47.** (1) | **48.** (3) |
| **49.** (2) | **50.** (2) | **51.** (4) | **52.** (4) |
| **53.** (2) | **54.** (1) | **55.** (3) | **56.** (4) |
| **57.** (3) | **58.** (1) | **59.** (3) | **60.** (3) |
| **61.** (1) | **62.** (1) | **63.** (1) | **64.** (4) |
| **65.** (3) | **66.** (2) | **67.** (1) | **68.** (1) |
| **69.** (2) | **70.** (2) | **71.** (3) | **72.** (4) |
| **73.** (2) | **74.** (2) | **75.** (3) | **76.** (3) |
| **77.** (2) | **78.** (2) | **79.** (1) | **80.** (1) |
| **81.** (1) | **82.** (4) | **83.** (1) | **84.** (3) |
| **85.** (4) | **86.** (2) | **87.** (3) | **88.** (1) |
| **89.** (3) | **90.** (1) | **91.** (1) | **92.** (4) |
| **93.** (2) | **94.** (2) | **95.** (3) | **96.** (1) |
| **97.** (3) | **98.** (1) | **99.** (1) | **100.** (2) |

## EXPLANATIONS

**1.** (4) Lead is used in pencil as writing material. Similarly, ink is used as writing material in pen.

**2.** (1)

D G I : J M O :: R U W : X A C

(D +6 → J, G +6 → M, I +6 → O; R +6 → X, U +6 → A, W +6 → C)

**3.** (1)

2 3 6 : 4 7 2 :: 1 2 3 : 2 4 6

(236 ×2 → 472; 123 ×2 → 246)

**4.** (4) Except 'cycle' all others are motor vehicles.

**5.** (3) $W \xrightarrow{-1} V \xrightarrow{-1} U$

$Q \xrightarrow{-1} P \xrightarrow{-1} O$

$L \xrightarrow{-1} K \xrightarrow{-1} J$

But,

$G \xrightarrow{-2} E \xrightarrow{-1} D$

**6.** (3) Except the number 21, all others are Prime Numbers.
21 = 3 × 7

**7.** (1) Two letters of first word are present in the second word.
Three letters of second word are present in the third word.
Three letters of third word are present in the fourth word.
Three letters of fourth word are present in the fifth word.
Now, four letters of fifth word would be there in the sixth word.

**8.** (3)

E → H → L → O → S → [V]
+3, +4, +3, +4, +3

**9.** (4)

99 → 90.7 → 82.4 → [74.1] → 65.8 → 57.5
–8.3, –8.3, –8.3, –8.3, –8.3

**10.** (3) Number of days from 29th July to 12th August = 2 + 12
= 14 days
= 2 weeks + 0 day
∴ 12th August = Saturday

**11.** (2) Possible weights of combinations of boxes :
(i) 30 + 70 = 100
(ii) 30 + 60 = 90
(iii) 30 + 20 = 50
(iv) 70 + 60 = 130
(v) 70 + 20 = 90
(vi) 60 + 20 = 80
(vii) 30 + 70 + 60 = 160
(viii) 30 + 60 + 20 = 110
(ix) 70 + 60 + 20 = 150
(x) 30 + 70 + 20 = 120
(xi) 30 + 70 + 60 + 20 = 180

**12.** (1) There is no 'E' letter in the given word. Therefore, the word INLET cannot be formed.

J O S [T L I N G] ⇒ GLINT

J [O] S [T] L [I N G]
⇒ INGOT

[J O] S T L [I N G]
⇒ JINGO

**13.** (3)

| P | R | O | J | E | C | T |
|---|---|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| K | I | L | Q | V | X | G |

Pairs of Opposite letters.
Therefore,

| E | G | O |
|---|---|---|
| ↓ | ↓ | ↓ |
| V | T | L |

**14.** (4)

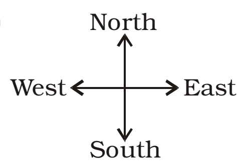
| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

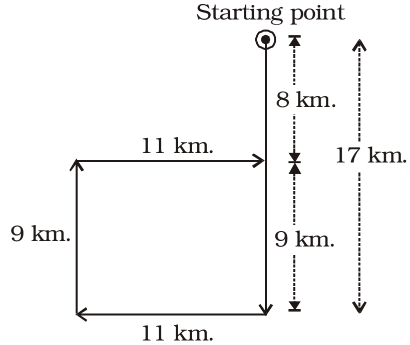
75 – 5 + 25 ÷ 125 = ?
⇒ ? = 75 + 5 × 25 – 125
⇒ ? = 75 + 125 – 125 = 75

**15.** (2) 15 @ 7 = (15 + 7) × 2
= 22 × 2 = 44
5 @ 4 = (5 + 4) × 2
= 9 × 2 = 18
6 @ 17 = (6 + 17) × 2
= 23 × 2 = 46
Therefore,
17 @ 4 = (17 + 4) × 2
= 21 × 2 = 42

**16.** (2) In each column, the sum of second and third numbers is equal to the first number.
First Column
21 + 95 = 116
Second Column
? + 47 = 94
⇒ ? = 94 – 47 = 47
Third Column
87 + 48 = 135

**17.** (2)




Now, Car is 8 km south of its starting position.

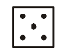
**18.** (2) First Premise is Universal Negative (E-type).
Second Premise is Universal Affirmative (A-type).

No shirt is T-shirt.
↙↗
All T-shirts are cotton.

E + A ⇒ $O_1$-type of Conclusion "Some cotton are not shirts".
Conclusion II is the Converse of the first Premise.

**19.** (1) After folding the figure :

[#] lies opposite .

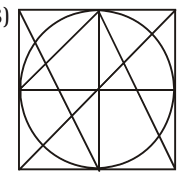
 lies opposite .

lies opposite .

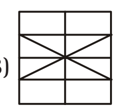
If is on the top cannot be on the front surface.

**20.** (3) Collectors who are military officers can be represented by the letters common to the circle and the triangle. Such letter is G. Collectors who are fathers can be represented by the letters common to the circle and the rectangle. Such letters are A and B.

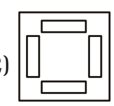
**21.** (3)



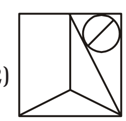
**22.** (3)



**23.** (2)



**24.** (2)



**25.** (2) P = 99
A = 04, 23
W = 77
N = 59

| Option | P | A | W | N |
|---|---|---|---|---|
| (1) | ~~44~~ | ~~10~~ | ~~87~~ | ~~55~~ |
| (2) | 99 | 23 | 77 | 59 |
| (3) | ~~03~~ | ~~40~~ | ~~86~~ | ~~65~~ |
| (4) | ~~31~~ | ~~31~~ | ~~59~~ | ~~66~~ |

**26.** (2) An inferior good is a type of good whose demand declines when income rises. In other words, demand of inferior goods is inversely related to the income of the consumer. The

inferior relates to the behavior and affordability of a good and does not necessarily mean that an inferior good lacks quality or is a bad purchase decision.

**27.** (1) Explanation same as above

**28.** (4) The Concurrent List is a list of 52 items given in the Seventh Schedule of the Constitution of India. Population control and Family planning is a part of concurrent list.

**29.** (2) Mandamus is an order from the Supreme Court or High Court to a lower court or tribunal or public authority to perform a public or statutory duty. This writ of command is issued by the Supreme Court or High court when any government, court, corporation or any public authority has to do a public duty but fails to do so.

**30.** (4) According to Chola inscriptions :

- shalabhoga was land for the maintenance of a school
- pallichchhandam was land donated to Jaina institutions

**31.** (1) Shah Jahan (Muhammad Khurram) was one of the most successful emperors of the Mughal Empire. He was the fifth Mughal ruler after Babur, Humayun, Akbar and Jahangir. Though Shah Jahan was an able administrator and commander, he is best known for the construction of the Taj Mahal, in the memory of his beloved wife, Mumtaz Mahal. He is also the founder of Shahjahanabad in Delhi.

**32.** (4) A landslide, also known as a landslip or Mudslide, is a form of mass wasting that includes a wide range of ground movements, such as rockfalls, deep failure of slopes and shallow debris flows. Landslides occur when gravitational and other types of shear stresses within a slope exceed the shear strength of the materials that form the slope.

**33.** (1) When glacial ice melts, different types of rock are laid down that have been carried along by the glacier. Piles of these deposits are called moraines. There are a total of 8 types of moraine. Superglacial and englacial only exist while a glacier is present. The other six can be left behind after a glacierrecedes : ground, lateral, medial, push, recessional and terminal.

**34.** (1) Class Mammalia includes mammal's along with fish, reptiles, amphibians and birds. The class Mammalia is worldwide in distribution. It has been said that mammals have a wider distribution and are more adaptable than any other single class of animals, with the exception of certain less-complex forms such as arachnids and insects.

**35.** (2) The members of Phaeophyceae are popularly called brown algae. The brown colour of this group of algae is due to the possession of a pigment called fucoxanthin. Like other algae, the distribution of brown algae is broad, from tropical to polar zones, but brown algae can be found in intertidal zones, near coral reefs, and in deeper waters.

**36.** (1) Echinoderm is the common name given to any member of the phylum Echinodermata of marine animals. The adults are recognizable by their radial symmetry, and include such well-known animals as sea stars, sea urchins, sand dollars, and sea cucumbers, as well as the sea lilies or stone lilies. Echinoderms are found at every ocean depth, from the intertidal zone to the abyssal zone.

**37.** (2) In an uniform motion the body covers equal distances in equal interval of time. That means it has a constant velocity over the given period of time.

**38.** (3) The impression of an image persists on the retina for about 1/16th of a second. This feature is called persistence of vision. Due to this, when many still images are shown in a sequence; they give the illusion of moving images. Movies and animation are made by exploiting this property of the human eye.

**39.** (1) In Microsoft Word, decrease indent allows us to move selected paragraphs to the left. By pressing the 'Decrease Indent' button on the toolbar, the indentation function is called.

**40.** (1) Vinegar is a liquid that is produced from the fermentation of ethanol into acetic acid. The fermentation is carried out by bacteria. Vinegar consists of acetic acid ($CH_3COOH$), water and trace amounts of other chemicals, which may include flavorings.

**41.** (4) The reaction of Copper Sulphate and Iron produces Iron Sulphate and Copper. This is a single displacement reaction in which copper has been displaced from iron from copper sulphate solution.

**42.** (3) A stenotherm is a species or living organism only capable of living or surviving within a narrow temperature range. The opposite is a eurytherm, an organism that can function at a wide range of different body temperatures.

**43.** (1) Gangajal delivey scheme has been launched by the Government from Patna in Bihar. It is a new initiative of the central government to deliver "Gangajal" to doorstep through Indian Postal Services. Under this scheme the pious Gangajal, brought from Gangotri and Rishikesh, would be delivered at the doorsteps of people at nominal prices.

**44.** (3) Joseph John Thomson was an English physicist and Nobel Laureate in Physics, credited with the discovery and identification of the electron; and with the discovery of the first subatomic particle.

**45.** (1) The 2016 Kabaddi World Cup was an international kabaddi tournament governed by the International Kabaddi Federation held in Ahmedabad. The tournament was won by India, who defeated Iran in the championship game to win their third Kabaddi World Cup.

**46.** (2) The Mattancherry Palace is a Portuguese palace popularly known as the Dutch Palace, in Mattancherry, Kochi, in Kerala which features Kerala murals depicting portraits and exhibits of the Rajas of Kochi.

**47.** (1) The Arjuna Awards are given by the Ministry of Youth Affairs and Sports, government of India to recognize outstanding achievement in National sports. Instituted in 1961, the award carries a cash prize of Rs. 500,000 a bronze statue of Arjuna and a scroll.

**48.** (3) A Visit from the Goon Squad is work of fiction by Jennifer Egan.

- The Corrections is a 2001 novel by American author Jonathan Franzen.
- The Known World is a 2003 historical novel by Edward P. Jones.

**49.** (2) The G20 Digital Ministerial Meeting was held in Dusseldorf, Germany. G20 cooperation on the Digital Economy has become a special priority, subsequent to the adoption of Digital Economy Development and Cooperation Initiative in the 2016 Hangzhou Summit, under the Chinese Presidency.

**50.** (2) The Maitree Express or Dhaka-Kolkata Express is an International passenger train serving the railway connecting the Bangladeshi capital of Dhaka and India's West Bengal (Paschim Banga) states capital Kolkata.

**51.** (4)

| 2 | 99 | |
|---|---|---|
| 2 | 49 | → 1 |
| 2 | 24 | → 1 |
| 2 | 12 | → 0 |
| 2 | 6 | → 0 |
| 2 | 3 | → 0 |
| | 1 | → 1 |

$\therefore 99 = (1100011)_2$

**52.** (4) Let Anil complete the work in $x$ days.

$\therefore$ Bimal will complete the work in $2x$ days.

$\therefore$ (Anil + Bimal)'s 1 days work

$= \frac{1}{x} + \frac{1}{2x} = \frac{2+1}{2x} = \frac{3}{2x}$

$\therefore \frac{2x}{3} = 9$

$\Rightarrow x = \frac{9 \times 3}{2} = 13.5$ days

**53.** (2) Circumference of circle = 22 cm.

$\Rightarrow 2\pi r = 22$

$\Rightarrow 2 \times \frac{22}{7} \times r = 22$

$\Rightarrow r = \frac{22 \times 7}{22 \times 2} = \frac{7}{2}$ cm.

$\therefore$ Area of circle $= \pi r^2$

$= \frac{22}{7} \times \left(\frac{7}{2}\right)^2$

$= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} = \frac{77}{2}$ cm.$^2$

$= 38.5$ cm.$^2$

**54.** (1) Cost price of article = Rs. $x$

$\therefore$ Its marked price = 250% of $x$

= Rs. $\frac{250x}{100}$ = Rs. $\frac{25}{10}$

According to the question,

60% of $\frac{25x}{10} = 600$

$\Rightarrow \frac{25x}{10} \times \frac{6}{10} = 600$

$\Rightarrow x = \frac{600 \times 10 \times 10}{25 \times 6}$ = Rs. 400

**55.** (3) Let the number of coins of Rs. 2, 50 paise and 25 paise be $3x$, $5x$ and $7x$ respectively.

$\therefore$ Sum of their values

$= 2 \times 3x + \frac{50 \times 5x}{100} + \frac{25 \times 7x}{100}$

$= 51.25$

$\Rightarrow 6x + \frac{5x}{2} + \frac{7x}{4} = 51.25$

$\Rightarrow 24x + 10x + 7x = 51.25 \times 4$

$\Rightarrow 41x = 205 \Rightarrow x = \frac{205}{41} = 5$

$\therefore$ Number of coins of 50 paise $= 5x = 5 \times 5 = 25$

**56.** (4) Total runs scored in 40 overs = 40 × 4.8 = 192

$\therefore$ Required run rate in 10 overs

$= \frac{241 - 192}{100} = \frac{49}{10} = 4.9$

**57.** (3) Profit per cent

$= \frac{\frac{5}{4} \times 26 - 25}{25} \times 100$

$= \left(\frac{130 - 100}{4 \times 25}\right) \times 100$

= 30%

**58.** (1) Let the number be $x$.

According to the question,

$x + 120 = 130\%$ of $x$

$\Rightarrow x + 120 = \frac{130x}{100}$

$\Rightarrow \frac{13x}{10} - x = 120$

$\Rightarrow \frac{13x - 10x}{10} = 120$

$\Rightarrow 3x = 1200$

$\Rightarrow x = \frac{1200}{3} = 400$

**59.** (3) Relative speed

= (20 + 25) kmph

= 45 km/hr.

$\therefore$ Initial distance between them

= Relative × Time

$= \left(45 \times \frac{56}{60}\right)$ km. = 42 km.

**60.** (3) $A = P\left(1 + \frac{r}{100}\right)^n$

$\Rightarrow 5324 = P\left(1+\frac{10}{100}\right)^3$

$= P\left(1+\frac{1}{10}\right)^3$

$\Rightarrow 5324 = P\left(\frac{11}{10}\right)^3$

$\Rightarrow P = 5324 \times \frac{10}{11} \times \frac{10}{11} \times \frac{10}{11}$

= Rs. 4000

**61.** (1) $\frac{14}{3} + \frac{1}{2}\left(x - \frac{7}{3}\right) = \frac{-2x}{3}$

$\Rightarrow \frac{14}{3} + \frac{x}{2} - \frac{7}{6} = \frac{-2x}{3}$

$\Rightarrow \frac{x}{2} + \frac{2x}{3} = \frac{7}{6} - \frac{14}{3}$

$\Rightarrow \frac{3x+4x}{6} = \frac{7-28}{6}$

$\Rightarrow 7x = -21$

$\Rightarrow x = \frac{-21}{7} = -3$

**62.** (1) $a + b = 10$, $ab = 24$

$\therefore a^2 + b^2 = (a+b)^2 - 2ab = (10)^2 - 2 \times 24$

$= 100 - 48 = 52$

$\therefore a^3 + b^3 = (a+b)(a^2 + b^2 - ab)$

$= (10)(52 - 24)$

$= 10 \times 28 = 280$

**63.** (1) Let the fraction be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$x + \frac{3}{x} = \frac{19}{4}$

$\Rightarrow \frac{x^2+3}{x} = \frac{19}{4}$

$\Rightarrow 4x^2 - 19x + 12 = 0$

$\Rightarrow 4x^2 - 16x - 3x + 12 = 0$

$\Rightarrow 4x(x-4) - 3(x-4) = 0$

$\Rightarrow (x-4)(4x-3) = 0$

$\Rightarrow x = 4$ or, $x = \frac{3}{4}$

**64.** (4) Let the first term of A.P. be $a$ and its common difference be $d$.

$\therefore a_n = a + (n-1)d$

$a + 2d = 13$ ...... (i)

$a + 5d = -5$ ..... (ii)

By equation (i) – (ii),

$a + 2d = 13$

$a + 5d = -5$

$-\quad -\quad\quad +$

$-3d = 18 \Rightarrow d = -6$

$\therefore a = 13 - 2d = 13 - 2(-6) = 25$

$\therefore$ 11th term $= a + 10d$

$= 25 + 10(-6)$

$= 25 - 60 = -35$

**65.** (3) Reflection $(h, k)$ of point $(x_1, y_1) = (6 - 1)$ in the line $y = 2$

$\Rightarrow y - 2$ :

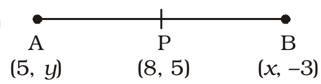
$k + y_1 = -2(y_1 - y)$

$\Rightarrow k + 1 = -2(-1-2)$

$\Rightarrow k + 1 = 6 \Rightarrow k = 6 - 1 = 5$

$\therefore$ Reflection = (6, 5)

**66.** (2)




Point P is the mid–point of line segment AB.

$\therefore \frac{5+x}{2} = 8$

$\Rightarrow 5 + x = 16 \Rightarrow x = 16 - 5 = 11$

**67.** (1) Required equation is :

$y = mx + c$ where $m$

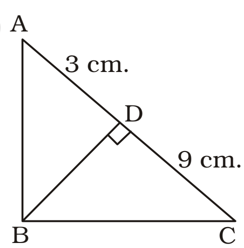
$= \frac{1}{3}$ and $c = 5$

$\Rightarrow y = \frac{1}{3}x + 5$

$\Rightarrow 3y = x + 15$

$\Rightarrow x - 3y = -15$

**68.** (1)




$\Delta$ ADB ~ $\Delta$ BDC

$\Rightarrow \frac{AD}{BD} = \frac{BD}{DC}$

$\Rightarrow BD^2 = AD \times DC$

$\Rightarrow BD = \sqrt{3 \times 9} = \sqrt{27}$

$\therefore AB = \sqrt{AD^2 + BD^2}$

$= \sqrt{3^2 + (\sqrt{27})^2} = \sqrt{9+27}$

$= \sqrt{36} = 6$ cm.

**69.** (2) cot 60° – sec 45°

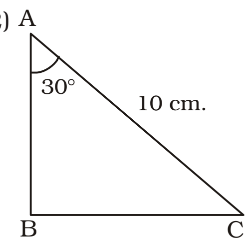
$\frac{1}{\sqrt{3}} - \sqrt{2}$

$\frac{1 - \sqrt{3} \times \sqrt{2}}{\sqrt{3}}$

$= \frac{(1 - \sqrt{3} \times \sqrt{2})\sqrt{3}}{\sqrt{3} \times \sqrt{3}}$

$= \frac{\sqrt{3} - 3\sqrt{2}}{3}$

**70.** (2)




$\cos 30° = \frac{AB}{AC}$

$\Rightarrow \frac{\sqrt{3}}{2} = \frac{AB}{10}$

$\Rightarrow AB = \frac{\sqrt{3}}{2} \times 10 = 5\sqrt{3}$ cm.

**71.** (3) $\cot\theta = \frac{24}{7}$

$\therefore \text{cosec}\theta = \sqrt{1 + \cot^2\theta}$

$= \sqrt{1 + \left(\frac{24}{7}\right)^2} = \sqrt{1 + \frac{576}{49}}$

$= \sqrt{\frac{49+576}{49}} = \sqrt{\frac{625}{49}} = \frac{25}{7}$

$\therefore \sin\theta = \frac{7}{25}$

**72.** (4) Wild-life sanctuary (=11) has more tigers than D (=10) but less than F (=13).

**73.** (2) Required total number of tigers = 29 + 11 + 5 + 10 + 22 + 13 – 3 + 9 = 96

**74.** (2)

$$= \frac{\text{Number of tigers in sanctuaries E and F}}{\text{Number of tigers in sanctuaries D and C}}$$

$$= \frac{22+13}{10+5} = \frac{35}{15} = \frac{7}{3} = 7:3$$

**75.** (3) Let the number of tigers 20 years ago be $x$.

$\therefore$ 120% of 125% of $x = 90$

$$\Rightarrow x \times \frac{120}{100} \times \frac{125}{100} = 90$$

$$\Rightarrow x = \frac{90 \times 100 \times 100}{120 \times 125}$$

$\Rightarrow x = 60$

**76.** (3) **Around or round (Preposition)** = on every side of something

**Note :** As per Oxford dictionary,

In most contexts, the use of 'round' is regarded as informal or non–standard.

The use of 'around' is safer in formal writing.

So, correct expression : world around us.....

**77.** (2) On his way $\rightarrow$ implies that he is en route

**Onto** $\rightarrow$ used for expressing movement on or to a particular place/position

**Look at the sentence :**

Move the books onto the second shelf.

So, correct expression : were on their way.....

**78.** (2) **Hysterically (Adverb)** = with wildly uncontrolled emotion

**Lot (Noun)** = group; set

**Crazy (Adjective)** = mad; insane

**Guffaw (Noun)** = hearty laugh; loud laugh

As an adverb (hysterically) modifies a verb (laughed), so 'hysterically' is apt and appropriate.

**79.** (1) **Bluff (Verb)** = pretend; sham; feign

**Stuff (Noun)** = material; fabric

**Enough (determiner)** = sufficient; adequate

**Cough (Noun)** = wheeze; rasp

**80.** (1) **Belligerent/antagonistic (Adjective)** = hostile; aggressive

**Look at the sentence :**

The mood at the meeting was belligerent.

**Cooperative (Adjective)** = supportive

**Dandy (Noun)** = glamour boy; beau

**Delightful (Adjective)** = cheerful; happy

**81.** (1) **Indiscreet/careless (Adjective)** = impolite; impudent; reckless

**Look at the sentence :**

They have been embarrassed by indiscreet friends.

**Accurate/attentive (Adjective)** = correct; precise; faithful

**Choosy (Adjective)** = fussy; finicky

**82.** (4) **Incentive/impetus/stimulus/enticement (Noun)** = motivation; spur

**Look at the sentence :**

The government gave farmers an incentive to improve their land.

**Hindrance (Noun)** = obstacle; impediment

**Look at the sentence :**

A hindrance to the development process.

**83.** (1) **Benediction/invocation/beatitude (Noun)** = blessing; prayer

**Look at the sentence :**

He said a prayer, asking for benedictions.

**Criticism (Noun)** = reproval; censure

**Look at the sentence :**

He received a lot of criticism.

**Approbation (Noun)** = approval; acceptance

**84.** (3) **to stop broadcasting a** radio **or TV programme**

**Look at the sentence :**

Many serials have gone off the air of late.

**85.** (4) **an excessive display of attention or activity**.

**Look at the sentence :**

He often makes a fuss about food.

**Fuss (Noun)** = ado; uproar; commotion

**86.** (2) Should have been $\rightarrow$ should have + $V_3$ (Past participle)

I should have been with them tonight $\rightarrow$ it means that I was not with them though my presence with them was absolute necessary.

**87.** (3) must not + be + left $\Rightarrow$ must not + be + $V_3$ (Past participle)

It is passive formation of the modal verb (must).

**Look at the sentences :**

The poor must not be laughed at.

The teacher must not be abused.

$\Rightarrow$ must is followed by $V_1$ (be...was...been) and be is a helping verb which is followed by $V_3$ (left).

**88.** (1) **Agitated/chaotic/violent (Adjective)** = upset; perturbed; flustered.

**89.** (3) **Brier or briar (Noun)** = any of a number of prickly scrambling shrubs

**Prickle (Noun)** = thorn; barb

**Splint (Noun)** = a strip of rigid material used for supporting and immobilizing a broken bone

**90.** (1) Correct spelling is ..... possesses.

**91.** (1) Correct spelling is ..... murmuring.

**94.** (2) The application for a new job was mailed by him.

It is active voice of simple Past tense.

Its passive voice is formed as follows :

Sub + was/were + $V_3$ + by + object.....

**95.** (3) My aunt exclaimed disgustedly that the child was very dirty.

It is direct speech of an exclamatory sentence.

Its indirect speech is formed as follows :

$\Rightarrow$ 'said to' changes to exclaimed with grief/joy/ or exclaimed disgustedly as the context may be.

$\Rightarrow$ 'connector' that is used

$\Rightarrow$ Use of tense as per context

$\Rightarrow$ The exclamatory sentence changes to the assertive sentence, *i.e.* sign of exclamation (!) is removed. ❑❑❑

SET 37

# SOLVED PAPER
# SSC CGL TIER-I (CBE) EXAM

**Held on : 21.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :

Cow : Milk :: Bees : ?

(1) Silk (2) Honey
(3) Flower (4) Water

**2.** Select the related letters from the given alternatives :

ACF : GIL :: OQT : ?

(1) VXY (2) UWZ
(3) RSV (4) VXZ

**3.** Select the related number from the given alternatives :

64 : 8 :: 0.01 : ?

(1) 0.1 (2) 1
(3) 10 (4) 0.08

**4.** Select the odd word from the given alternatives :

(1) Stream (2) Rivulet
(3) River (4) Valley

**5.** Select the odd letters from the given alternatives :

(1) ADG (2) HKN
(3) ORU (4) BDF

**6.** Select the odd number from the given alternatives :

(1) 49 (2) 25
(3) 8 (4) 36

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.

upset, aurora, spurn, strut, status, ?

(1) treasure (2) perfect
(3) right (4) unique

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :

L, N, Q, S, V, ?

(1) W (2) Y
(3) Z (4) X

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.

111, 107.5, 104, ? , 97, 93.5

(1) 100 (2) 99.5
(3) 100.5 (4) 99

**10.** Advik's birthday is on Monday 19th June. On what day of the week will be Nishith's birthday in the same year if Nishith was born on 17th November?

(1) Saturday
(2) Wednesday
(3) Friday
(4) Sunday

**11.** The weights of 4 boxes are 90, 30, 40 and 60 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?

(1) 200 (2) 220
(3) 180 (4) 130

**12.** From the given words, select the word which cannot be formed using the letters of the given word.

**JAUNTILY**

(1) NEATLY (2) AUNTY
(3) JAUNT (4) UNITY

**13.** If UNCOVER is coded as FMXLEVI, then how will TIP be coded as?

(1) LTV (2) NQV
(3) KHQ (4) GRK

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?

50 + 5 – 700 × 28 = ?

(1) 94 (2) 100
(3) 90 (4) 275

**15.** If 3 % 2 = 50, 2 % 4 = 60 then what is the value of 5 % 4 = ?

(1) 16 (2) 9
(3) 90 (4) 20

**16.** Select the missing number from the given responses :

| 23 | ? | 12 |
|---|---|---|
| 6 | 13 | 7 |
| 138 | 117 | 84 |

(1) 9 (2) 13
(3) 17 (4) 15

**17.** A paper boy cycles 10 km East, then turns South and cycles 3 km, then turns West and cycles 6 km, then turns to his right and cycles 3 km. Where is he now with reference to his starting position?

(1) 4 km West
(2) 14 km East
(3) 4 km East
(4) 14 km West

**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.

**Statements :**

I. All flowers are leaves.
II. Some flowers are plants.

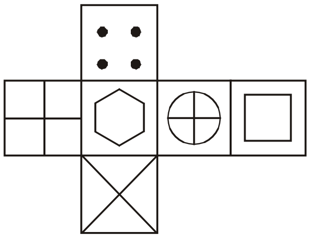
**Conclusions :**

I. Some leaves are plants.
II. Some plants are flowers.

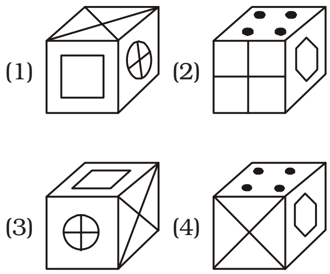
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure ?

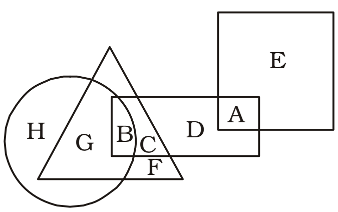
**Question Figure :**



**Answer Figures :**



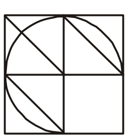
**20.** In the following figure, square represents Philosophers, triangle represents Police officers, circle represents Pharmacists and rectangle represents Americans. Which set of letters represents Americans who are Police officers ?



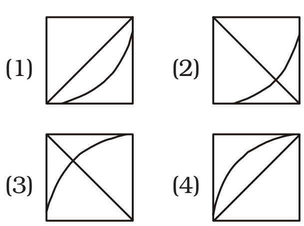

(1) G, F, D, A (2) B, C
(3) C, D (4) B, C, G, F

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

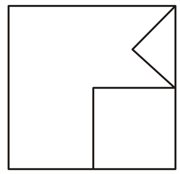


**Answer Figures :**

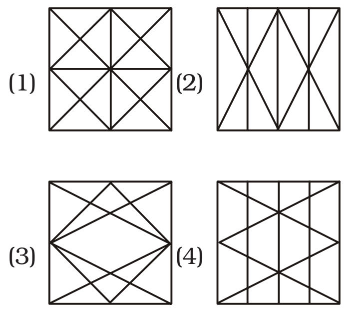


**22.** From the given answer figures, select the one in which the question figures is hidden/embedded.

**Question Figure :**

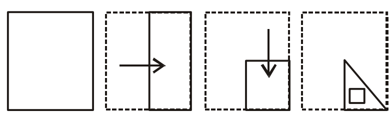


**Answer Figures :**

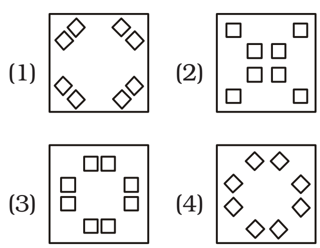


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures :**

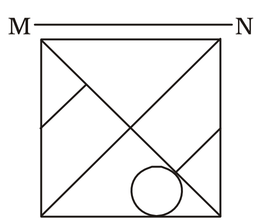


**Answer Figures :**

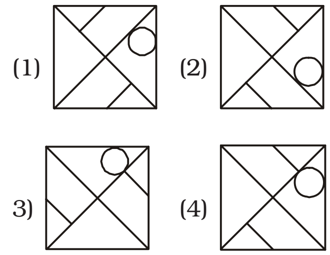


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure ?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The column and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 24, 40 etc and 'Z' can be represented by 67, 98 etc. Similarly, you have to identify the set for the word **'OXEN'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | G | B | I | K | C |
| 1 | L | H | H | H | G |
| 2 | L | H | I | A | K |
| 3 | A | D | M | G | B |
| 4 | K | J | E | L | F |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | Z | X | S | R | T |
| 6 | O | N | Z | P | T |
| 7 | U | R | Q | Z | W |
| 8 | V | Q | X | Y | V |
| 9 | Y | O | X | Z | N |

(1) 65, 97, 42, 99
(2) 21, 33, 58, 67
(3) 44, 44, 55, 58
(4) 14, 34, 55, 66

## GENERAL AWARENESS

**26.** If the ______ firm has zero costs or only has fixed cost, the quantity supplied in equilibrium is given by the point where the average revenue is zero.
(1) Perfect Competition
(2) Monopoly
(3) Oligopoly
(4) Monopolistic Competition

**27.** The average variable cost curve is ____ shaped.
(1) U (2) V
(3) X (4) W

**28.** "Central Bureau of Intelligence and Investigation" is listed in the ______ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** There are total _____ parliamentary seats (Rajya Sabha constituency) in Odisha.
(1) 11 (2) 19
(3) 10 (4) 1

**30.** In 1918, Mahatma Gandhi went to ______ to organise a satyagraha movement amongst cotton mill workers.
(1) Madras (2) Bombay
(3) Surat (4) Ahmedabad

**31.** Murshid Quli Khan, Alivardi Khan and Sirajuddaullah were all nawabs of _____?
(1) Lucknow
(2) Varanasi
(3) Hyderabad
(4) Bengal

**32.** ______ affect the rate of humus formation of soil.
(1) Flora and Fauna
(2) Time
(3) Temperature
(4) Parent rock

**33.** The latitudes of main land of India extends between _____.
(1) 8°4' N and 37°6' N
(2) 8°4' W and 37°6' W
(3) 8°4' E and 37°6' E
(4) 8°4' S and 37°6' S

**34.** ______ is a straw coloured, viscous fluid constituting nearly 55 per cent of the blood.
(1) Plasma
(2) Formed Elements
(3) Blood Groups
(4) Coagulation of Blood

**35.** Sexual reproduction in Algae that takes place through fusion of two similar size gametes is called?
(1) Zoospores
(2) Anisogamous
(3) Isogamous
(4) Oogamous

**36.** Animals in which the cells are arranged in three embryonic layers are called ________.
(1) Diploblastic
(2) Ectoderm
(3) Tripoblastic
(4) Endoderm

**37.** An image formed by a concave mirror on a screen is called
(1) Virtual image
(2) Real image
(3) Inverted image
(4) Erect image

**38.** The distance-time graph for the motion of an object moving with a constant speed is a
(1) Dot
(2) Circle
(3) Straight Line
(4) Curve

**39.** ________ is a collection of data values of same types having a common name.
(1) Object (2) String
(3) Array (4) Numbers

**40.** A _______ thread is actually stronger than a steel wire.
(1) wool (2) cotton
(3) jute (4) nylon

**41.** The process of depositing a layer of any desired metal on another material by means of electricity is called _________.
(1) Electroplating
(2) Galvanisation
(3) Rusting
(4) Crystallisation

**42.** ________ refers to the number of births during a given period in the population that are added to the initial density.
(1) Natality
(2) Mortality
(3) Immigration
(4) Emigration

**43.** _________ is a welfare scheme started by the Prime Minister in order to provide LPG connections to domestic households that fall under the below the poverty line category.
(1) Gram Uday Se Bharat Uday Abhiyan
(2) Pradhan Mantri Ujjwala Yojana
(3) Pradhan Mantri Surakshit Matritva Yojana
(4) Vidyanjali Yojana

**44.** Who invented the waterproof raincoat?
(1) Robert Hooke
(2) Cai Lun
(3) Charles Macintosh
(4) William Harvey

**45.** In which sport did India win Silver medal at Rio Olympics 2016?
(1) Badminton
(2) Boxing
(3) Hockey
(4) Wrestling

**46.** Who was the architect of Taj Mahal?
(1) Ustad Ahmad Lahouri
(2) Norman Foster
(3) Henry Irwin
(4) Ustad Ghani Utbuddin

**47.** The Nobel Prize in Literature 2016 was awarded to?
(1) Frank Sinatra
(2) Elvis Presley
(3) Bob Dylan
(4) Jimi Hendrix

**48.** Which of the statements given below are not correct?
1. The author of 'India 2020: A Vision for the New Millennium' is Shashi Tharoor.
2. The author of 'The Great Indian Novel' is A.P.J. Abdul Kalam.

3. The author of 'My Country My Life' is I.K Gujral.
(1) 1 and 2 (2) 2 an d 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** In April 2016, amid rising tension over North Korea, which country launched its first domestically built aircraft carrier?
(1) South Korea
(2) Japan (3) China
(4) USA

**50.** Which National Park in Nepal is a continuation of India's Valmiki National Park?
(1) Chitwan National Park
(2) Bandipur National Park
(3) Dudhwa National Park
(4) Jim Corbett National Park

## QUANTITATIVE APTITUDE

**51.** What is the remainder when 2468 is divided by 37?
(1) 26 (2) 36
(3) 18 (4) 14

**52.** A can do 75% of a job in 9 days and B can do half of the job in 8 days. If they work on it together, then in how many days can they do half of the job?
(1) $\frac{40}{7}$ (2) $\frac{24}{7}$
(3) $\frac{7}{2}$ (4) $\frac{9}{2}$

**53.** The area of 4 walls of a cuboid 400 sq. cm., its length is 15 cm and height is 8 cm. What is its breadth (in cm.)?
(1) 12 (2) 20
(3) 24 (4) 10

**54.** At 20% discount the selling price of an article is Rs. 2400, what is the selling price (in Rs.) if the discount is 32.5%?
(1) 2125 (2) 2225
(3) 2025 (4) 2325

**55.** What is the fourth proportional to 24, 120 and 22?
(1) 110 (2) 120
(3) 100 (4) 90

**56.** What is the average of all numbers between 8 and 74 which are divisible by 7?
(1) 40 (2) 41
(3) 42 (4) 43

**57.** A trader had 1200 kg. of rice. He sold a part of it at 5% profit and the rest at 11% profit, so that he made a total profit of 7%. How much (in kg) rice did he sell at 5% profit?
(1) 900 (2) 600
(3) 400 (4) 800

**58.** 20% of $a = b$, then $b$% of 20 is the same as ________ of $a$.
(1) 8% (2) 40%
(3) 4% (4) 80%

**59.** After excluding stoppages, the speed of a bus is 60 kmph and after including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?
(1) 10 (2) 9
(3) 12 (4) 15

**60.** The simple and compound interest that can be earned in two years at the same rate is Rs. 1,000 and Rs. 1,040 respectively. What is the rate (per cent per annum) of interest?
(1) 9 (2) 10
(3) 8 (4) 11

**61.** If $\frac{5}{2} - \left(\frac{6}{5}\right)\left(x - \frac{15}{2}\right) = \frac{-x}{5}$, then what is the value of $x$ ?
(1) $\frac{-23}{2}$ (2) $\frac{13}{2}$
(3) $\frac{-13}{2}$ (4) $\frac{23}{2}$

**62.** If $a - b = 2$ and $ab = 24$, then what is the value of $(a^3 - b^3)$ ?
(1) 280 (2) 124
(3) 140 (4) 152

**63.** The sum of twice a fraction and its reciprocal is $\frac{17}{6}$. What is the fraction?
(1) $\frac{4}{3}$ (2) $\frac{5}{4}$
(3) $\frac{3}{4}$ (4) $\frac{4}{5}$

**64.** The 3rd and 7th term of an arithmetic progression are –9 and 11 respectively. What is the 15th term?
(1) 28 (2) 87
(3) 51 (4) 17

**65.** What is the reflection of the point (4, 7) in the line $y = -1$?
(1) (–6, 7) (2) (–4, –9)
(3) (4, –9) (4) (–6, –7)

**66.** What are the co-ordinates of the centroid of a triangle, whose vertices are A (2, 5), B (–4, 0) and C (5, 4)?
(1) (–1, 3) (2) (1, 3)
(3) (1, –3) (4) (–1, –3)

**67.** The slope of the line AB is $\frac{-2}{3}$.
Co-ordinates of points A and B are ($x$, –3) and (5, 2) respectively. What is the value of $x$?
(1) 4 (2) –14
(3) 12.5 (4) –4

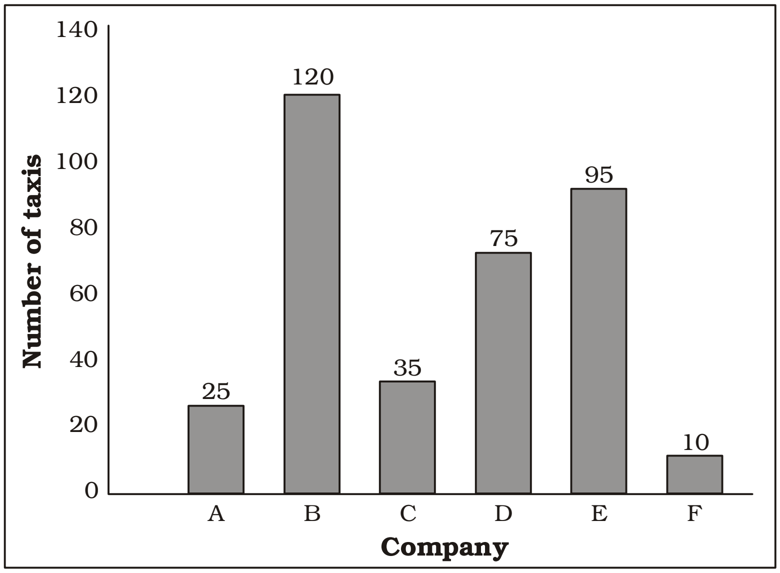
**68.** D and E are points on sides AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 2 : 3, what is the ratio of area of ΔADE and area of quadrilateral BDEC?
(1) 4 : 21 (2) 4 : 25
(3) 4 : 29 (4) 4 : 9

**69.** What is the value of (cot 60° – cos 45°) ?
(1) $\left(\frac{9-2\sqrt{3}}{9}\right)$
(2) $\left(\frac{2\sqrt{6}-1}{\sqrt{3}}\right)$
(3) $\left(\frac{1-2\sqrt{3}}{2}\right)$
(4) $\left(\frac{\sqrt{2}-\sqrt{3}}{\sqrt{6}}\right)$

**70.** ΔPQR is right angled at Q. If m ∠R = 60°, what is the length of PR (in cm), if RQ = $4\sqrt{3}$ cm?
(1) 8 (2) 4
(3) $\frac{8}{\sqrt{3}}$ (4) $8\sqrt{3}$

**71.** If $\tan\theta = \frac{9}{40}$, then $\sec\theta$ = ?
(1) $\frac{40}{41}$ (2) $\frac{9}{41}$
(3) $\frac{41}{40}$ (4) $\frac{41}{9}$

**Directions (72–75) :** There are six taxi companies (A, B, C, D, E, F) in a certain city. The bar graph shows the number of taxis run by each of these six companies. Study the diagram and answer the following questions.




**72.** Which taxi company has more taxis than A but less than D?
(1) B (2) C
(3) F (4) E

**73.** If 30 taxis quit company B and joined company D then D will have how many more taxis than C?
(1) 40 (2) 30
(3) 110 (4) 70

**74.** Even if A and C decide to merge, still D will have how many more taxis (in %) than the merged A and C entity?
(1) 15 (2) 20
(3) 10 (4) 25

**75.** If each taxi on an average runs 100 kms every day and if fuel cost is Rs. 3 per km, then all these taxis spend how much (in Rs.) on fuel every day?
(1) 128000 (2) 108000
(3) 118000 (4) 98000



## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** I took the shortest (1)/ way through the (2)/ little park close the palace. (3)/ No Error (4)

**77.** As it came to a stop (1)/ the conductor called (2)/ overin a loud voice. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Moving to the city was eye-______ for the straitlaced country girl.
(1) clearing (2) freeing
(3) saving (4) opening

**79.** With a blood test, a physician was able to ________ the woman's pregnancy.
(1) term (2) confirm
(3) firm (4) confer

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Exemption**
(1) Immunity
(2) Accountability
(3) Liability
(4) Responsibility

**81. Perverse**
(1) Agreeable
(2) Nefarious
(3) Compliant
(4) Willing

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. To maneuver**
(1) To manipulate
(2) To proceed
(3) To cease
(4) To machinate

**83. To avert**
(1) To aid
(2) To deter
(3) To forestall
(4) To preclude

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. To go to somebody's head**
(1) To have a huge ego
(2) To complain to the highest authority
(3) To make someone dizzy or slightly drunk
(4) To arrive at the central point of the topic

**85. To make amends**
(1) To make new friends
(2) To feel guilty for something you have not done
(3) To compensate
(4) To make flimsy excuses

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "no improvement".

**86.** Why should we **(bothered)**?
(1) bother
(2) bothering
(3) to bother
(4) No improvement

**87.** I absolutely must **(seen)** him, however painful it may be for me.
(1) saw
(2) seeing
(3) see
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. To move back and forth or sideways**
(1) Sojourn (2) Tarriance
(3) Traverse (4) Breather

**89. The remains of something that has been badly damaged**
(1) Pristine
(2) Immaculate
(3) Wreckage
(4) Sterile

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Mutiniers
(2) Muteneers
(3) Muteniers
(4) Mutineers

**91.** (1) Obeisance
(2) Obeisanse
(3) Obesance
(4) Obesanse

**Directions (92–93) :** Each question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. Our only enemies were**
X. heat, thirst, and flies, but far
Y. from man or beast than that awful trinity
Z. rather would I have faced any danger
(1) XYZ (2) ZYX
(3) XZY (4) ZXY

**93. Thus, I stand on a**
X. hill and watch a labourer
Y. upon the distant railway
Z. striking with his sledge
(1) XYZ (2) XZY
(3) ZYX (4) ZXY

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**The painter painted the entire bungalow.**
(1) The entire bungalow is painted by the painter.
(2) Painting of the entire bungalow was done by the painter.
(3) The entire bungalow was painted by the painter.
(4) Painting of the entire bungalow is done by the pa inter.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**The teacher said, "Nobody can solve the problem."**
(1) The teacher said that nobody can solve the problem.
(2) The teacher said that nobody should solve the problem.
(3) The teacher said that somebody can solve the problem.
(4) The teacher said that nobody could solve the problem.

**Directions (96–100) :** A passage is given with five questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Manja, or the glass-coated string used for flying kites, not only poses threat to humans, animals and birds but also to trees. A study by the country's oldest botanical garden has revealed that it poses a great threat to trees. But how can a snapped string struck in a tree kill the tree? Apparently, it does so by allying with the creepers in the garden.

A research paper by three scientists of the Acharya Jagdish Chandra Bose Indian Botanic Garden, located in West Bengal's Howrah district, illustrates in detail how the manja, in collusion with climbers, does the damage. "The abandoned, torn kite strings act as an excellent primary supporting platform for the tender climbers, giving easy passage to reach the top of the trees. Lateral branches from the top of the climber and other accessory branches from the ground reaches the top taking support of the first climber, completely covers the treetop, thus inhibiting the penetration of sunlight," says the research paper.

**96.** Abandoned, torn kite strings stuck in trees benefits whom?
(1) Humans (2) Creepers
(3) Birds (4) Trees

**97.** How many scientists contributed to a study by country's oldest botanical gardens on how manja can kill a tree?
(1) Two (2) Three
(3) Five (4) Four

**98.** How can a tree be killed by a creeper?
(1) By blocking its access to sunlight
(2) By wrapping its tentacles around its branches
(3) By sucking away the nutrients
(4) By secreting toxic chemicals

**99.** What would be the acronym for India's oldest botanical garden?
(1) AJCBIBG (2) AJCBBGI
(3) AJBCIBG (4) AJBCBGI

**100.** What gives easy passage to 'climbers' to top of the trees?
(1) Creepers
(2) Torn kites
(3) Lateral branches
(4) Manja

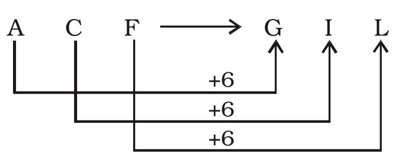
## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (2) | **3.** (1) | **4.** (4) |
| **5.** (4) | **6.** (3) | **7.** (1) | **8.** (4) |
| **9.** (3) | **10.** (3) | **11.** (1) | **12.** (1) |
| **13.** (4) | **14.** (4) | **15.** (3) | **16.** (1) |
| **17.** (3) | **18.** (3) | **19.** (4) | **20.** (2) |
| **21.** (2) | **22.** (1) | **23.** (3) | **24.** (3) |
| **25.** (1) | **26.** (1) | **27.** (1) | **28.** (1) |
| **29.** (1) | **30.** (4) | **31.** (4) | **32.** (1) |
| **33.** (1) | **34.** (1) | **35.** (3) | **36.** (3) |
| **37.** (2) | **38.** (3) | **39.** (3) | **40.** (4) |
| **41.** (1) | **42.** (1) | **43.** (2) | **44.** (3) |
| **45.** (1) | **46.** (1) | **47.** (3) | **48.** (4) |
| **49.** (3) | **50.** (1) | **51.** (1) | **52.** (2) |
| **53.** (4) | **54.** (3) | **55.** (1) | **56.** (3) |
| **57.** (4) | **58.** (3) | **59.** (4) | **60.** (3) |
| **61.** (4) | **62.** (4) | **63.** (3) | **64.** (3) |
| **65.** (3) | **66.** (2) | **67.** (3) | **68.** (1) |
| **69.** (4) | **70.** (4) | **71.** (3) | **72.** (3) |
| **73.** (4) | **74.** (4) | **75.** (2) | **76.** (3) |
| **77.** (3) | **78.** (4) | **79.** (2) | **80.** (1) |
| **81.** (2) | **82.** (3) | **83.** (1) | **84.** (3) |
| **85.** (3) | **86.** (1) | **87.** (3) | **88.** (3) |
| **89.** (3) | **90.** (4) | **91.** (1) | **92.** (3) |
| **93.** (2) | **94.** (3) | **95.** (4) | **96.** (2) |
| **97.** (2) | **98.** (1) | **99.** (1) | **100.** (4) |

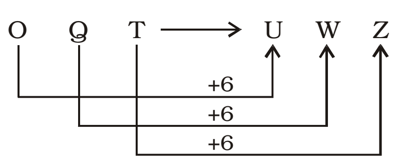
## EXPLANATIONS

**1.** (2) Milk is obtained from cow. Similarly, honey is obtained from Bees.

**2.** (2)




Similarly,




**3.** (1) $8 \times 8 = 64$

Similarly,

$0.1 \times 0.1 = 0.01$

**4.** (4) Except Valley, all others refer to flow of water in a channel. Valley is an area of land between hills or mountains, often with a river flowing through it.

**5.** (4) $A \xrightarrow{+3} D \xrightarrow{+3} G$

$H \xrightarrow{+3} K \xrightarrow{+3} N$

$O \xrightarrow{+3} R \xrightarrow{+3} U$

But, $B \xrightarrow{+2} D \xrightarrow{+2} F$

**6.** (3) Except the number 8, all others are perfect squares. The number 8 is a perfect cube.

$49 = 7 \times 7$

$25 = 5 \times 5$

$36 = 6 \times 6$

But, $8 = 2 \times 2 \times 2$

**7.** (1) In the subsequent words the position of 'u' is shifted towards right by one place.

upset ⇒ First from left

aurora ⇒ Second from left

spurn ⇒ Third from left

strut ⇒ Fourth from left

status ⇒ Fifth from left

treasure ⇒ Sixth from left

**8.** (4)

$L \xrightarrow{+2} N \xrightarrow{+3} Q \xrightarrow{+2} S \xrightarrow{+3} V \xrightarrow{+2} \boxed{X}$

**9.** (3) $111 - 3.5 = 107.5$

$107.5 - 3.5 = 104$

$104 - 3.5 = \boxed{100.5}$

$100.5 - 3.5 = 97$

$97 - 3.5 = 93.5$

**10.** (3) Total number of days from 19th June to 17th November

$= 11 + 31 + 31 + 30 + 31 + 17$

$= 151$ days

$= 21$ weeks 4 days

∴ 17th November

= Monday + 4 = Friday

**11.** (1) Possible weights of boxes :

(i) 90 + 30 = 120 kilograms

(ii) 90 + 40 = 130 kilograms

(iii) 90 + 60 = 150 kilograms

(iv) 30 + 40 = 70 kilograms

(v) 40 + 60 = 100 kilograms

(vi) 90 + 30 + 40 = 160 kilograms

(vii) 90 + 30 + 60 = 180 kilograms

(viii) 90 + 40 + 60 = 190 kilograms

(ix) 30 + 40 + 60 = 130 kilograms

(x) 30 + 60 = 90 kilograms

(xi) 90 + 30 + 40 + 60

= 220 kilograms

**12.** (1) There is no 'E' letter in the given word. Therefore, the word NEATLY cannot be formed.

J [A U N T] I L [Y]

⇒ A U N T Y

[J A U N T] I L Y

⇒ J A U N T

J A [U N T I] L [Y]

⇒ U N I T Y

**13.** (4)

| U | N | C | O | V | E | R |
|---|---|---|---|---|---|---|
| ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ |
| F | M | X | L | E | V | I |

Therefore,

| T | I | P |
|---|---|---|
| ↕ | ↕ | ↕ |
| G | R | K |

**14.** (4)

| | |
|---|---|
| + ⇒ × | − ⇒ + |
| × ⇒ ÷ | ÷ ⇒ − |

$50 + 5 - 700 \times 28 = ?$

$\Rightarrow ? = 50 \times 5 + 700 \div 28$

$\Rightarrow ? = 250 + 25 = \boxed{275}$

**15.** (3) 3 % 2 = 50

⇒ $(3 + 2) \times 10 = 50$

2 % 4 = 60

⇒ $(2 + 4) \times 10 = 60$

5 % 4 = ?

⇒ $? = (5 + 4) \times 10 = \boxed{90}$

**16.** (1) First Column

$23 \times 6 = 138$

Second Column

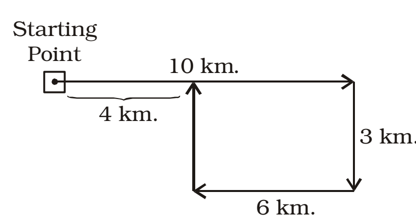
$? \times 13 = 117$

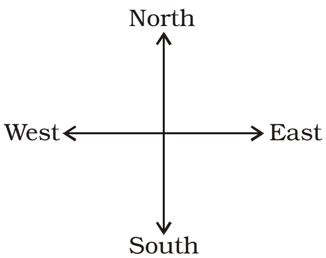
$\Rightarrow ? = \frac{117}{13} = \boxed{9}$

Third Column

$12 \times 7 = 84$

**17.** (3)






Now, he is 4 km to the east of starting point.

**18.** (3) First Premise is Universal Affirmative (A–type).

Second Premise is Particular Affirmative (I–type).

Some plants are flowers.

All flowers are leaves.

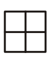
I + A ⇒ I–type of Conclusion

"Some plants are leaves."

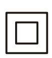
Conclusion I is the Converse of it.

Conclusion II is the Converse of the second Premise.

**19.** (4) After folding the figure :

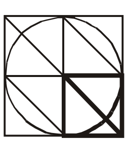
 lies opposite .

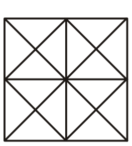
lies opposite .

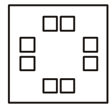
lies opposite .

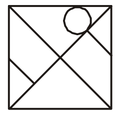
and cannot be on the adjacent faces.

**20.** (2) Rectangle represents Americans and triangle represents police officers. Americans who are police officers can be represented by the letters which are common to rectangle and triangle. Such letters are B and C.

**21.** (2) 

**22.** (1) 

**23.** (3) 

**24.** (3) 

**25.** (1) O ⇒ 65, 96

X ⇒ 56, 87, 97

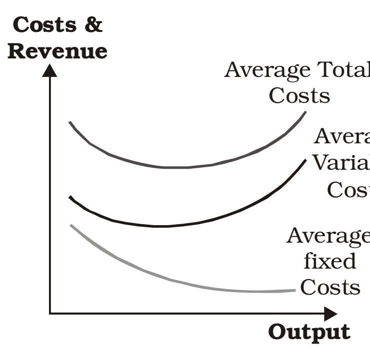
E ⇒ 42

N ⇒ 66, 69

| Option | O | X | E | N |
|---|---|---|---|---|
| (1) | 65 | 97 | 42 | 99 |
| (2) | 21 | 33 | 58 | 67 |
| (3) | 44 | 44 | 55 | 58 |
| (4) | 14 | 34 | 55 | 66 |

**26.** (1) If the monopoly firm has zero costs or only has fixed cost, the quantity supplied in equilibrium is given by the point where marginal revenue is zero. In contrast, perfect competition would supply an equilibrium quantity given by the point where average revenue is zero.

**27.** (1) Average variable costs are found by dividing total fixed variable costs by output. The average variable cost (AVC) curve will at first slope down from left to right, then reach a minimum point, and rise again.




AVC is 'U' shaped because of the principle of variable Proportions, which explains the three phases of the curve :

- Increasing returns to the variable factors, which cause average costs to fall, followed by :
- Constant returns, followed by :
- Diminishing returns, which cause costs to rise

**28.** (1) The Central Bureau of Intelligence and Investigation comes under the Union list of Seventh Schedule. The Union List is a list of 97 items (the last item is numbered 100) given in Seventh Schedule in the Constitution of India on which Parliament has exclusive power to legislate.

**29.** (1) There are 10 Rajya Sabha seats from Odisha. Uttar Pradesh has maximum 31 Rajya Sabha seats, followed by Maharashtra with 19 seats and Tamil Nadu with 18 seats.

**30.** (4) In February March 1918, a conflict arose between the Gujarat Mill owners and workers on the question of Plague Bonus of 1917. Gandhi was invited by Anasuya Ben Sarabai and her brother Ambalal Sarabhai, rich mill-owner of Ahmadabad, towards the cause of the mill owners. In March 1918, under the leadership of Gandhi, there was a strike in the cotton mills. The strike was successful, and the workers got a 35% wage increase.

**31.** (4) Murshid Quli Khan (1717–1727), Alivardi Khan (1740-1756) and Sirajuddaulah (April 1756 – 2 June, 1757) were all nawabs of Bengal. Siraj ud-Daulah was the last independent Nawab of Bengal. The end of his reign marked the start of British East India Company rule over Bengal and later almost all of South Asia.

**32.** (1) Flora and Fauna play a critical role in the rate of humus formation of soil. When plants die, leaves are dropped onto the soil surface where microorganisms can "attack" and decay plant tissue. These organisms utilize easily digestible materials (like simple sugars and carbohydrates) found in the

plant material, leaving fats and waxes behind. The material left behind is not easily decomposed; it comprises the humus found in soil.

**33.** (1) India lies entirely in the Northern hemisphere. India's main land extends between latitudes 8°4'N and 37°6'N and longitudes 68°7'E and 97°25'E. India is divided into almost two equal parts by the Tropic of Cancer (23° 30'N),

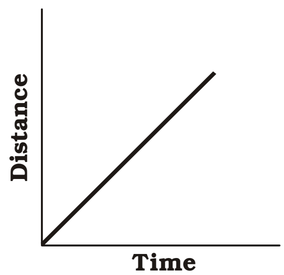
**34.** (1) Plasma is a straw coloured, viscous fluid constituting nearly 55 per cent of the blood. 90-92 per cent of plasma is water and proteins contribute 6-8 per cent of it. Fibrinogen, globulins and albumins are the major proteins. Fibrinogens are needed for clotting or coagulation of blood; while, globulins primarily are involved in defense.

**35.** (3) Isogamy is a form of sexual reproduction that involves gametes of similar morphology (similar shape and size), differing in general only in allele expression in one or more mating-type regions. Because both gametes look alike, they cannot be classified as "male" or "female." Isogamy occurs commonly in unicellular algae, where male and female gametes are morphologically similar but differ in physiology.

**36.** (3) Triploblasty is a condition of the blastula in which there are three primary germ layers: the ectoderm, mesoderm, and endoderm. The germ layers form during gastrulation of the blastula. All "higher" and "intermediate animals" (from flat worms to humans), arise from a triploblastic ovum. Triploblastic organisms generally possess bilateral symmetry.

**37.** (2) An image which can be formed on the screen is known as real image and the one which cannot be formed on screen is known as virtual image. A concave mirror forms a real image when object is placed beyond focal plane. This image can only be seen if a screen is kept at the point of intersection of rays.

**38.** (3) Plotting distance against time tell us a lot about motion. If an object moves at a constant speed, it means it has the same increase indistance in a given time. In other words, the object moves at a constant speed which is shown by straight lines on a graph.




**39.** (3) To store similar types of data for a common purpose, instead of declaring a large number of variables for a large number of data, we use a special type of storage mechanism called an array. An array is a data structure which can store collection of values having same data type. Arrays are used to store logically related data values under a common name.

**40.** (4) Nylon is a synthetic fibre and has some special chemical properties because of which their fibres are strong. There is amide linkage between the monomers of nylon which make their strings extremely strong; stronger even than steel wire. Nylon wires are used for making parachutes and ropes for rock climbing.

**41.** (1) The process of depositing a layer of a desired metal on any other material by means of electrochemistry is called electroplating. It uses electric current to reduce dissolved metal cations so that they form a thin coherent metal coating on an electrode. Electroplating is primarily used to change the surface properties of an object.

**42.** (1) Natality refers to the number of births during a given period in the population that are added to the initial density. Along with mortality, immigration and emigration, natality is one of the four factors which affect the population density in a habitat.

**43.** (2) Pradhan Mantri Ujjwala Yojana (PMUY) is a scheme of the Ministry of Petroleum & Natural Gas for providing LPG connections to women from Below Poverty Line (BPL) households. This Rs. 8,000 crore scheme to provide 5 crore free LPG connections to poor families was launched by Prime Minister Modi on 1 May, 2016.

**44.** (3) Charles Macintosh, a Scottish chemist, is credited with the invention of waterproof fabrics and raincoats. He designed one of the first waterproof fabrics by rubberising sheets of material in his textile factory. First sold in 1824, the Macintosh coat, a perfect rainwear solution, is named after him.

**45.** (1) India's ace shuttler P V Sindhu, in August 2016, won silver medal at 2016 Rio Olympics. Sindhu won the silver medal in women's singles badminton event, becoming India's first woman to win an Olympics silver medal. She lost to Spain's Carolina Marín in the final.

**46.** (1) Ustad Ahmad Lahori is credited as the chief architect of the Taj Mahal in Agra, built between 1632 and 1648 during the ruling period of Mughal emperor Shah Jahan. Lahori had also laid the foundations of the Red Fort at Delhi (built between 1638 and 1648).

**47.** (3) US folk singer-songwriter Bob Dylan was, in October 2016, awarded the Nobel Prize for Literature 2016 for having "created new poetic expres-

sions within the great American song tradition". Dylan became the first American to win since Beloved author Toni Morrison picked up the prize in 1993.

**48.** (4) India 2020 : A Vision for the New Millennium (1998) was written by late former President of India A.P.J Abdul Kalam, before his tenure as the President. The Great Indian Novel (1989) is a satirical novel by Shashi Tharoor. My Country My Life is an autobiographical book by L. K. Advani that was first published in 2008.

**49.** (3) China, in August 2017, launched its first domestically built aircraft carrier amid rising tension over North Korea and worries about Beijing's assertiveness in the South China Sea. The new conventionally powered carrier will be able to operate China's Shenyang J-15 fighter jets.

**50.** (1) Chitwan National Park in Nepal is contiguous to the Indian Tiger Reserve Valmiki National Park. Adjacent to the east of Chitwan National Park is Parsa National Park. The coherent protected area of 2,075 $km^2$ represents the Tiger Conservation Unit (TCU) Chitwan-Parsa-Valmiki, which covers an area of 3,549 $km^2$.

**51.** (1) 37) 2468 (66

$$\begin{array}{r} 222 \\ \hline 248 \\ 222 \\ \hline 26 \end{array}$$

$\therefore$ Remainder = 26

**52.** (2) $\because$ A finishes 75% of work in 9 days.

$\therefore$ A will do 100% work in

$= \frac{9}{75} \times 100 = 12$ days

Similarly, B will do 1 work in 16 days.

$\therefore$ (A + B)'s 1 day's work

$= \frac{1}{12} + \frac{1}{16}$

$= \frac{4+3}{48} = \frac{7}{48}$

$\therefore$ Time taken in doing 1 work

$= \frac{48}{7}$ days

$\therefore$ Time taken in doing $\frac{1}{2}$ work $= \frac{24}{7}$ days

**53.** (4) Area of the four walls of cuboid = $2 \times h\ (l + b)$

$\therefore$ $2 \times 8\ (15 + b) = 400$

$\Rightarrow 15 + b = \frac{400}{16} = 25$

$\Rightarrow b = 25 - 15 = 10$ cm.

**54.** (3) Let the marked price of article be Rs. $x$.

$\therefore \frac{80}{100}$ of $x = 2400$

$\Rightarrow x = \frac{2400 \times 100}{80} =$ Rs. 3000

$\therefore$ After a discount of 32.5%, S.P. of article = (100 – 32.5)% of Rs. 3000

$= \frac{3000 \times 67.5}{100} =$ Rs. 2025

**55.** (1) Let the fourth proportional be $x$.

$\therefore \frac{24}{120} = \frac{22}{x} \Rightarrow \frac{1}{5} = \frac{22}{x}$

$\Rightarrow x = 5 \times 22 = 110$

**56.** (3) Numbers between 8 and 74 which are divisible by 7

$\Rightarrow$ 14, 21, ..... 70.

Again, $a_n = a + (n - 1)\ d$

$\Rightarrow 70 = 14 + (n - 1) \times 7$

$\Rightarrow (n - 1) \times 7 = 70 - 14$

$\Rightarrow n - 1 = \frac{56}{7} \Rightarrow n - 1 = 8$

$\Rightarrow n = 9$

$\therefore$ Their sum = 14 + 21 + ... 70

= 7 (2 + 3 + ..... + 10)

$= 7\left(\frac{10 \times 11}{2} - 1\right)$

$\left[\because 1 + 2 + 3 + \ldots + n = \frac{n(n+1)}{2}\right]$

= 7 (55 – 1) = 7 × 54

$\therefore$ Required average $= \frac{7 \times 54}{9}$

= 42

**57.** (4) Quantity of rice sold at 5% profit = $x$ kg (let)

$\therefore$ Quantity of rice sold at 11% profit = $(1200 - x)$ kg.

Price = per kg = Re. 1

According to the question,

$x \times \frac{5}{100} + (1200 - x) \times \frac{11}{100}$

$= 1200 \times \frac{7}{100}$

$\Rightarrow 5x + 13200 - 11x = 8400$

$\Rightarrow 13200 - 6x = 8400$

$\Rightarrow 6x = 13200 - 8400$

$\Rightarrow 6x = 4800$

$\Rightarrow x = \frac{4800}{6} = 800$ kg.

**58.** (3) According to the question,

$a \times \frac{20}{100} = b$

$\Rightarrow b = \frac{a}{5}$

$\therefore$ $b$% of 20 $= 20 \times \frac{a}{500} = \frac{a}{25}$

i.e., 4% of $a$.

**59.** (4) Period of stoppage per hour

$= \left(\frac{\text{Relative speed}}{\text{Faster speed}} \times 60\right)$ minutes

$= \left(\frac{60 - 45}{60} \times 60\right)$ minutes

= 15 minutes

**60.** (3) S.I. $= \frac{P \times r \times 2}{100}$

$\Rightarrow \frac{2PR}{100} =$ Rs. 1000 ... (i)

For 2 years,

C.I. – S.I. $= \frac{PR^2}{10000}$

$\therefore \quad \frac{PR^2}{10000} = \text{Rs. } 40 \quad \ldots \text{(ii)}$

On dividing equation (ii) by (i),

$$\frac{PR^2}{10000} \times \frac{100}{2PR}$$

$$= \frac{40}{1000} = \frac{4}{100}$$

$$\Rightarrow \frac{R}{2} = 4 \Rightarrow R = 8\% \text{ per annum}$$

**61.** (4) $\frac{5}{2} - \frac{6}{5}\left(x - \frac{15}{2}\right) = \frac{-x}{5}$

$$\Rightarrow \frac{5}{2} - \frac{6x}{5} + \frac{6}{5} \times \frac{15}{2} = \frac{-x}{5}$$

$$\Rightarrow \frac{5}{2} + 9 = \frac{6x}{5} - \frac{x}{5}$$

$$\Rightarrow x = \frac{5}{2} + 9 = \frac{5+18}{2} = \frac{23}{2}$$

**62.** (4) $a^3 - b^3 = (a - b)^3 + 3ab\,(a - b)$

$= (2)^3 + 3 \times 24 \times 2$

$= 8 + 144 = 152$

**63.** (3) Let the fraction be $x$.

According to the question,

$$2x + \frac{1}{x} = \frac{17}{6}$$

$$\Rightarrow \frac{2x^2+1}{x} = \frac{17}{6}$$

$\Rightarrow 12x^2 + 6 = 17x$

$\Rightarrow 12x^2 - 17x + 6 = 0$

$\Rightarrow 12x^2 - 9x - 8x + 6 = 0$

$\Rightarrow 3x\,(4x - 3) - 2\,(4x - 3) = 0$

$\Rightarrow (4x - 3)\,(3x - 2) = 0$

$$\Rightarrow x = \frac{3}{4} \text{ or, } \frac{2}{3}$$

**64.** (3) For an arithmetic series,

First term = $a$

Common difference = $d$

Number of terms = $n$

$\therefore a_n = a + (n - 1)\,d$

$\therefore a + 2d = -9 \quad \ldots \text{(i)}$

$a + 6d = 11 \quad \ldots \text{(ii)}$

By equation (ii) – (i),

$6d - 2d = 11 + 9$

$\Rightarrow 4d = 20 \Rightarrow d = 5$

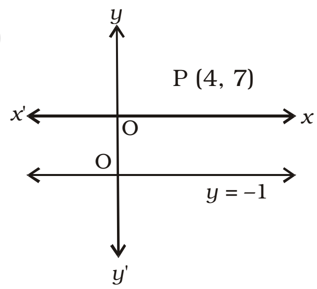
From equation (i),

$a + 10 = -9 \Rightarrow a = -19$

$\therefore a_{15} = a + 14d$

$= -19 + 14 \times 5 = -19 + 70 = 51$

**65.** (3)




$y = -1$ represents the equation of a line parallel to $x$–axis.

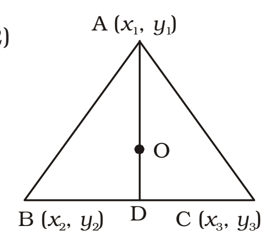
Point (4, 7) lies in the first quadrant.

Its image on $x$–axis will be (4, –7) in fourth quadrant.

Position of point P (4, 7) with respect to $y = -1$ = (4, 8) and position of image = (4, –8)

$\therefore$ Required position of image with respect to $x$–axis = (4, –9)

**66.** (2)




Co–ordinate of centroid O

$$= \left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}\right)$$

$$= \left(\frac{2-4+5}{3}, \frac{5+0+4}{3}\right)$$

$= (1, 3)$

**67.** (3) Slope of line passing through points $(x_1, y_1)$ and $(x_2, y_2)$

$$= \frac{y_2 - y_1}{x_2 - x_1}$$

$$\therefore \frac{2+3}{5-x} = \frac{-2}{3}$$

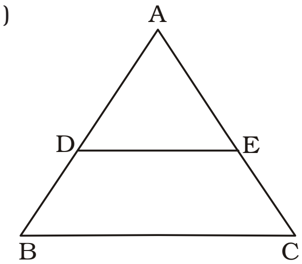
$$\Rightarrow \frac{5}{5-x} = \frac{-2}{3}$$

$\Rightarrow -10 + 2x = 15$

$\Rightarrow 2x = 25$

$$\Rightarrow x = \frac{25}{2} = 12.5$$

**68.** (1)




DE | | BC

$\therefore \angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA–similarity,

$\Delta ABC \sim \Delta ADE$

$$\therefore \frac{AD}{DB} = \frac{2}{3}$$

$$\Rightarrow \frac{DB}{AD} = \frac{3}{2}$$

$$\Rightarrow \frac{DB + AD}{AD} = \frac{3+2}{2}$$

$$\Rightarrow \frac{AB}{AD} = \frac{5}{2}$$

$$\therefore \frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta DEF}$$

$$= \frac{AB^2}{AD^2} = \frac{25}{4}$$

$$\therefore \frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta ADE} - 1$$

$$= \frac{25}{4} - 1$$

$$\therefore \frac{\text{Area of quadrilateral BDEC}}{\text{Area of } \Delta ADE}$$

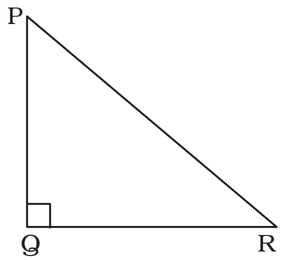
$$= \frac{21}{4}$$

$\therefore$ Required ratio = 4 : 21

**69.** (4) cot 60° – cos 45°

$$= \frac{1}{\sqrt{3}} - \frac{1}{\sqrt{2}} = \frac{\sqrt{2} - \sqrt{3}}{\sqrt{6}}$$

**70.** (4)




$\angle QRP = 60°$

$\cos 60° = \frac{QR}{PR}$

$\Rightarrow \frac{1}{2} = \frac{4\sqrt{3}}{PR}$

$\Rightarrow PR = 8\sqrt{3}$ cm.

**71.** (3) $\tan\theta = \frac{9}{40}$

$\therefore \sec\theta = \sqrt{1+\tan^2\theta}$

$= \sqrt{1+\left(\frac{9}{40}\right)^2}$

$= \sqrt{1+\frac{81}{1600}}$

$= \sqrt{\frac{1600+81}{1600}} = \sqrt{\frac{1681}{1600}} = \frac{41}{40}$

**72.** (3) Number of taxis :
Company A $\Rightarrow$ 25
Company D $\Rightarrow$ 75
Company C $\Rightarrow$ 35

**73.** (4) Required answer
= 75 + 30 – 35 = 70

**74.** (4) Number of taxis with A and C = 25 + 35 = 60
$\therefore$ Required per cent

$= \left(\frac{75-60}{60}\right) \times 100$

$= \frac{15}{60} \times 100 = 25\%$

**75.** (2) Total number of taxis
= 25 + 120 + 35 + 75 + 95 + 10 = 360
$\therefore$ Required expenditure
= Rs. (360 × 100 × 3)
= Rs. 108000

**76.** (3) **Close (Adjective)** = near in space or time.
**Look at the sentence :**
Our new house is close to the school.
Hence, little (small) park close to the palace..... should be used here.

**77.** (3) **Call (one) over** = To ask one to come to a particular place.
**Call away** = to ask somebody to stop.
What they are doing and to go somewhere else.
Hence, called away in a loud voice..... should be used here.

**78.** (4) **Eye–opening (Adjective)** = unexpectedly enlightening.
**Look at the sentence :**
This documentary should be an eye–opening experience to all.

**79.** (2) **Confirm (Verb)** = to prove that a belief or an opinion that was previously not completely certain is true.

**80.** (1) **Exemption (Noun)** = state of being free from an obligation; immunity; to excuse from a duty etc.
**Look at the sentence :**
Small businesses have been exempted from the tax increase.

**81.** (2) **Perverse (Adjective)** = abominable; wicked; nefarious; showing a deliberate and obstinate desire to behave in an unreasonable way.
**Look at the sentence :**
She took a perverse pleasure in hearing that her sister was getting divorced.

**82.** (3) **To maneuver (Verb)/to manoeuvre (Verb)** = to try to make someone act in a particular way; carefully manipulate a situation to achieve an end; move; to turn and direct an object.
**Cease (Verb)** = come to an end; halt; stop; terminate.
**Look at the sentences :**
The other directors are trying to manoeuvre her into resigning.
This car manoeuvres well at high speed.
The company has decided to cease all UK operations after this year.

**83.** (1) **To avert (Verb)** = turn a side; avoid; prevent something bad from happening; turn away your eyes.
**Aid (Verb)** = help; assist; abet.
**Look at the sentences :**
We tried to avert our thoughts from our massive financial problems.
She is charged with aiding and abetting the thief in his get away.

**84.** (3) **To go to somebody's head** = to make someone dizzy or slightly drunk; make someone intoxicated.
**Look at the sentence :**
Champagne always goes straight to my head.

**85.** (3) **To make amends** = to do something good to show that you are sorry about something you have done; compensate.
**Look at the sentence :**
She tried to make amends by inviting him out to dinner.

**86.** (1) **Look at the structure :**
why/what/how/where + should/would + Subject + $V_1$ (infinitive without to).
Hence, bother = take the trouble to do something..... should be used here.

**87.** (3) **Look at the structure :**
Subject + should/would/must + $V_1$ .
Hence, **see** should be used here.

**90.** (4) **Mutineers (Noun)** = those who take part in a mutiny/rebellion.

**91.** (1) **Obeisance (Noun)** = respect; homage; adoration.
**Look at the sentence :**
One by one the noblemen made their obeisance (= bent at the waist) to the queen.

**94.** (3) Subject + was/were + $V_3$ + by + object.

**95.** (4) Connective $\Rightarrow$ that
Can $\Rightarrow$ could

❑❑❑

SET 38

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 22.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Ice : Cold :: Steam : ?
(1) Gas (2) Hot
(3) Water (4) Engine

**2.** Select the related letters from the given alternatives :
DFH : GIK :: MOQ : ?
(1) PRT (2) OQS
(3) QSU (4) LNP

**3.** Select the related number from the given alternatives :
111 : 89 :: 105 : ?
(1) 95 (2) 115
(3) 85 (4) 100

**4.** Select the odd word from the given alternatives :
(1) Moon (2) Mars
(3) Saturn (4) Pluto

**5.** Select the odd letters from the given alternatives :
(1) DFH (2) KMO
(3) QTW (4) SUW

**6.** Select the odd number from the given alternatives :
(1) 25 (2) 49
(3) 9 (4) 8

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series :
Good, Odour, Urban, Anthem, ?
(1) Anthill (2) Empathy
(3) Europe (4) Goose

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
DFE, HJI, LNM, PRQ, ?
(1) STU (2) TVU
(3) UVW (4) RST

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :
$\frac{1}{4}$, 0.65, ?, $\frac{29}{20}$, 1.85
(1) 1.1 (2) $\frac{21}{20}$
(3) $\frac{19}{20}$ (4) 1.2

**10.** Priya's birthday is on Tuesday 11th April. On what day of the week will be Rani's birthday in the same year if Rani was born on 31st August?
(1) Monday (2) Wednesday
(3) Tuesday (4) Thursday

**11.** The weights of 4 boxes are 20, 40, 60 and 90 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 150 (2) 170
(3) 120 (4) 160

**12.** From the given alternative words, select the word which cannot be formed using the letters of the given word :
**DYNAMITE**
(1) ENMITY (2) ANYTIME
(3) NAMES (4) DAINTY

**13.** If EXPLAIN is coded as BUMIXFK, then how will GYM be coded as?
(1) YHN (2) UJM
(3) DVJ (4) IKL

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
825 × 25 – 27 ÷ 10 = ?
(1) 100 (2) 50
(3) 25 (4) 20

**15.** If 9 × 3 = 3; 15 × 3 = 5; 60 × 5 = 12; then what is the value of 27 × 3 = ?
(1) 30 (2) 9
(3) 3 (4) 6

**16.** Select the missing number from the given responses :

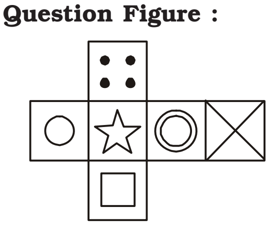
| 5 | 3 | 125 |
|---|---|---|
| 10 | 4 | 10000 |
| 2 | 5 | ? |

(1) 80 (2) 7
(3) 10 (4) 32

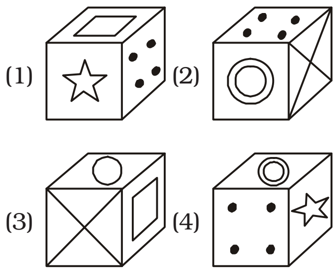
**17.** A woman walks 3 km North, then turns West and walks 4 km, then turns South and walks 7 km, then turns to her left and walks 4 km. Where is she now with reference to her starting position?
(1) 10 kms South
(2) 4 kms North
(3) 10 kms North
(4) 4 kms South

**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
**Statements :**
Some apples are red.
All red are oranges.
**Conclusions :**
I. No orange is apple.
II. Some apples are oranges.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

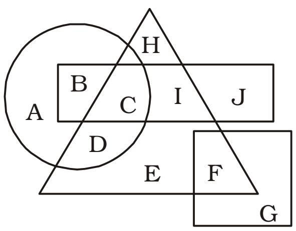
**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?
**Question Figure :**



**Answer Figures :**



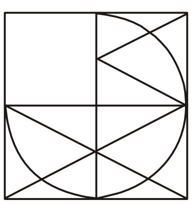

**20.** In the following figure, square represents astronauts, triangle represents swimmers, circle represents women and rectangle represents Indians. Which set of letters represents women who are either Indians or swimmers?



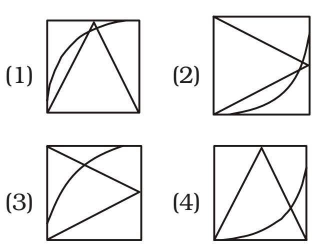

(1) C, D, I, E
(2) A, B, D, E, H, J
(3) B, C, D
(4) C

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

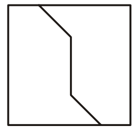


**Answer Figures :**

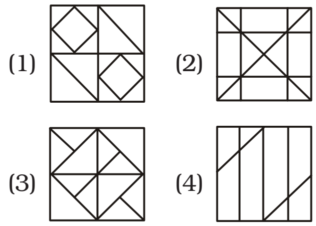



**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

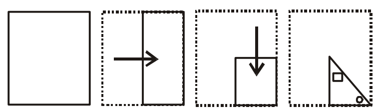


**Answer Figures :**

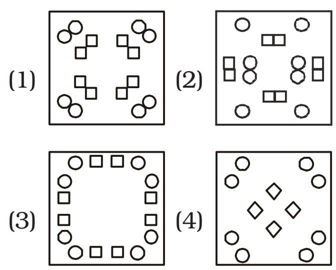



**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

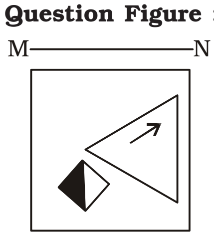


**Answer Figures :**

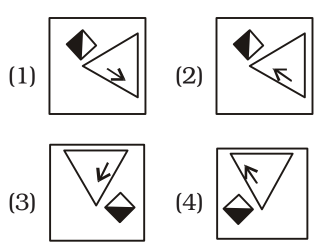



**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 04, 43 etc and 'Z' can be represented by 66, 75 etc. Similarly, you have to identify the set for the word **'MALE'**.

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | H | B | I | M | K |
| 1 | E | L | A | L | I |
| 2 | C | G | D | M | G |
| 3 | I | H | E | L | J |
| 4 | E | I | H | K | B |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | S | W | Q | N | W |
| 6 | Y | Z | Y | P | X |
| 7 | Z | S | U | X | X |
| 8 | W | R | P | P | V |
| 9 | Q | R | O | T | P |

(1) 11, 78, 32, 65
(2) 43, 01, 23, 67
(3) 03, 12, 11, 32
(4) 11, 02, 43, 76

## GENERAL AWARENESS

**26.** The ________ balance is the sum of the balance of merchandise trade, services and net transfers received from the rest of the world.
(1) Current Account
(2) Savings Account
(3) Capital Account
(4) Asset Account

**27.** The relation between the consumer's optimal choice of the quantity of a good and its price is very important and this relation is called the ________ function.
(1) Price
(2) Substitution
(3) Supply
(4) Demand

**28.** "Reserve Bank of India" is listed in the _________ list given in the Seventh Schedule in the Constitution of India.
(1) Union
(2) State
(3) Global
(4) Concurrent

**29.** ________ can give the Union parliament power to make laws on matters included in the State list.
(1) Ministry of Defence
(2) Prime Minister's Office
(3) Securities and Exchange Board of India
(4) Rajya Sabha

**30.** According to the categories of land mentioned in the Chola inscriptions __________ was known as the land of non-Brahmana peasant proprietors?
(1) Vellanvagai
(2) Brahmadeya
(3) Shalabhoga
(4) Devadana

**31.** Sher Khan defeated ________ at Chausa (1539) and Kanauj (1540), forcing him to flee to Iran.
(1) Aurangzeb
(2) Humayun
(3) Muhammad Azam Shah
(4) Bahadur ShahI

**32.** Around how much per cent of earth's surface is covered with water?
(1) 20-25% (2) 40-50%
(3) 70-80% (4) 55-60%

**33.** The method of soil conservation in which ploughing is done parallel to the contours of a hill slope to form a natural barrier for water to flow down the slop is called?
(1) Mulching
(2) Contour barriers
(3) Contour ploughing
(4) Terrace farming

**34.** In females, the ovaries are located _________ on each side of the lower abdomen.
(1) One (2) Two
(3) Three (4) Four

**35.** Through photosynthesis at least a half of the total carbon dioxide fixation on earth is carried out by?
(1) Pteridophytes
(2) Bryophytes
(3) Algae
(4) Gymnosperms

**36.** Locust, Butterfly, Scorpion and Prawn are all examples of which Phylum?
(1) Annelida
(2) Chordata
(3) Arthropoda
(4) Platyhelminthes

**37.** If an object moves in a circular path with uniform ________, its motion is called uniform circular motion.
(1) Speed
(2) Time
(3) Velocity
(4) Acceleration

**38.** The reflection formed by the plane mirror is ____________.
(1) vertical inversion
(2) a real image
(3) lateral inversion
(4) an enlarged image

**39.** In Microsoft Excel, the ______ function is used to count the number of cells within a range that meet the given criteria.
(1) COUNTIF
(2) COUNT
(3) SUMCOUNT
(4) COUNTSUM

**40.** Crystallisation is an example of?
(1) Physical Change
(2) Chemical Change
(3) Chemical Reaction
(4) Galvanisation

**41.** Vinegar and Baking Soda together produce ___________.
(1) Copper
(2) Carbon Dioxide
(3) Copper Sulphate
(4) Magnesium Oxide

**42.** The salt concentration (measured as salinity in parts per thousand), is _______ % in sea.
(1) 10-20 (2) 30-35
(3) 40-50 (4) 60-70

**43.** __________ scheme launched by the Central Government aims at development of rural growth clusters which have latent potential for growth.
(1) Soil Health Card
(2) Shyama Prasad Mukherji Rurban Mission
(3) Pradhan Mantri Fasal Bima Yojana
(4) National Rurban Mission

**44.** Who discovered Neon?
(1) Robert Noyce
(2) Enrico Fermi
(3) Morris W. Travers and William Ramsay
(4) Antoniode Ulloa and Charles Wood

**45.** Which nation(s) will host the Men's Cricket World Cup to be held in the year 2019?
(1) West Indies
(2) Australia and New Zealand
(3) England and Wales
(4) India and Pakistan

**46.** Gol Gumbaz is located in?
(1) Kerala (2) Gujarat
(3) Rajasthan (4) Karnataka

**47.** Which of the following is the second highest civilian award of India given for exceptional and distinguished service in any field including service rendered by the government servants?
(1) Padma Bhushan
(2) Param Vir Chakra
(3) Padma Vibhushan
(4) Bharat Ratna

**48.** Which of the statements given below are correct?

1. The author of the novel 'Ancillary Justice' is Charles Stross.
2. The author of the novel 'Air' is Ann Leckie.
3. The author of the novel 'Mission Earth' is L . Ron Hubbard.

(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** In April 2017, who has been made United Nation's Messenger of Peace?
(1) Scott Kelly
(2) Lang Lang
(3) Malala Yousafzai
(4) Leonardo Di Caprio

**50.** Which of the following countries is not a member of The South Asian Association for Regional Cooperation (SAARC)?
(1) Afghanistan
(2) Pakistan
(3) Maldives
(4) Myanmar

## QUANTITATIVE APTITUDE

**51.** What is the largest 4 digit number which is exactly divisible by 81?
(1) 9993 (2) 9936
(3) 9918 (4) 9963

**52.** If A and B together do a job in 7.5 days and if A could do the job in 10 days if he worked alone. How many days would B take to do the job if he worked alone?
(1) 30 (2) 40
(3) 25 (4) 50

**53.** What is the area (in sq. cm.) of a rectangle of perimeter 48 cm. and breadth 10 cm. ?
(1) 140 (2) 480
(3) 240 (4) 440

**54.** If the selling price of an item is Rs. 1000 after getting a discount of 20%, then what was the marked price (in Rs.)?
(1) 1200 (2) 1250
(3) 800 (4) 1400

**55.** If A = 2B = 4C; what is the value of A : B : C?
(1) 4 : 2 : 1 (2) 1 : 2 : 4
(3) 8 : 4 : 1 (4) 16 : 4 : 1

**56.** The average cost of 4 items in a shopping list is Rs. 1,250. If one more item whose cost is Rs. 2,000 is added to the list what will be the new average (in Rs.) ?
(1) 1100 (2) 1500
(3) 1400 (4) 1250

**57.** If a vendor sells a coconut at Rs. 24, he makes 20% loss. If he sells at Rs. 36, then what is his profit per cent ?
(1) 10 (2) 20
(3) 30 (4) 40

**58.** 20 is 0.25% of ?
(1) 10000 (2) 8000
(3) 5000 (4) 2500

**59.** If a taxi going at 40 km/hr takes 25 minutes to travel a certain distance, by how much should it increase its speed (in km/hr) to travel the same distance in 20 minutes?
(1) 50 (2) 5
(3) 25 (4) 10

**60.** If compound interest received on a certain amount in the 3rd year is Rs. 1,240, what will be the compound interest (in Rs.) for the 4th year on the same amount at 9% rate of interest?
(1) 1245.6 (2) 1521.6
(3) 1351.6 (4) 1220.6

**61.** If $-\frac{3}{2}+\left(\frac{2}{3}\right)(3x+9)=\frac{x}{2}$, then what is the value of $x$ ?
(1) –9 (2) 11
(3) 9 (4) –3

**62.** If $a - b = 2$ and $ab = 8$, then what is the value of $(a^3 - b^3)$ ?
(1) 65 (2) 34
(3) 43 (4) 56

**63.** A non-zero number is greater than 7 times its reciprocal by 9.3. What is the number?
(1) 10 (2) 20
(3) 5 (4) 14

**64.** What is the sum of the first 12 terms of an arithmetic progression if its first term is 3 and last term is 47?
(1) 260 (2) 300
(3) 280 (4) 220

**65.** The point P $(a, b)$ is first reflected in origin to P1 and P1 is reflected in $y$-axis to (4, –3). What are the co-ordinates of point P?
(1) (4, 3) (2) (–4, 3)
(3) (3, 4) (4) (–3, 4)

**66.** In what ratio is the segment joining (–1, 3) and (2, –4) divided by the $y$-axis?
(1) 2 : 1 (2) 1 : 4
(3) 1 : 2 (4) 4 : 1

**67.** What is the slope of the line $2x + 3y = 12$?
(1) $\frac{2}{3}$ (2) $\frac{3}{2}$
(3) $-\frac{3}{2}$ (4) $-\frac{2}{3}$

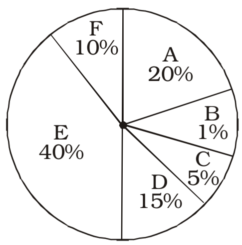
**68.** The areas of two similar triangles ΔXYZ and ΔPQR are 100 sq. cm. and 25 sq. cm. respectively. If PQ = 4 cm., then what is the length of XY (in cm.)?
(1) 16 (2) 14
(3) 8 (4) 20

**69.** What is the value of sec 30° + tan 60°?
(1) $\frac{5}{\sqrt{3}}$ (2) $\frac{\left(\sqrt{6}+1\right)}{\sqrt{3}}$
(3) $\frac{\left(\sqrt{3}+2\right)}{\sqrt{3}}$ (4) $\frac{\left(1+\sqrt{3}\right)}{2}$

**70.** ΔPQR is right angled at Q. If $m\angle R = 30°$, then what is the value of cot P?
(1) $\frac{1}{2}$ (2) $\frac{1}{\sqrt{2}}$
(3) $\frac{1}{\sqrt{3}}$ (4) 2

**71.** If $\sec\theta = \frac{5}{3}$, then what is the value of cosec θ ?
(1) 0.8 (2) 1.25
(3) $\frac{4}{3}$ (4) $\frac{3}{4}$

**Directions (72–75) :** The pie-chart shows the shares of 6 partners in a certain company. Study the diagram and answer the following questions :




**72.** Which partner has the lowest share?
(1) C (2) B
(3) D (4) F

**73.** Share of E is equal to the combined shares of :
(1) F, A and B
(2) D, C and B
(3) A, B and C
(4) F, C and D

**74.** Ratio of shares of E and B to those of A, C, D and F is :
(1) 1 : 2 (2) 2 : 1
(3) 1 : 1 (4) 1 : 3

**75.** If the company earns Rs. 20 lakh profit, and decides to distribute half of it to its shareholders, how much does D (in Rs.) get?
(1) 15,00,000
(2) 3,00,000
(3) 30000
(4) 1,50,000

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** He turned and walked (1)/ away, his head nearly a (2)/ foot up the others. (3)/No Error (4)

**77.** He parked the (1)/ car front of the house and (2)/ headed down the street. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** At the meeting, the school counsellor will ________ me on some of my career options.
(1) advise (2) speak
(3) say (4) listen

**79.** Boys and girls _______ enjoy playing with the building blocks.
(1) dislike (2) like
(3) even (4) alike

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Fissure**
(1) Agglutinate
(2) Blend
(3) Cleavage
(4) Entwine

**81. Morbid**
(1) Ghastly (2) Animated
(3) Buoyant (4) Jaunty

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Abeyance**
(1) Dormancy
(2) Quiescence
(3) Latency
(4) Continuation

**83. Callow**
(1) Inexperienced
(2) Jejune
(3) Sophisticated
(4) Juvenile

**Directios (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Get on the nerves**
(1) To be an irritant
(2) To lose confidence
(3) To become very sensitive; cry easily
(4) To become very strong emotionally

**85. Keep under one's hat**
(1) Keep all your wealth in your home
(2) To keep something a secret
(3) Steal and hide something
(4) Take care of somebody else's valuables given to you for safe keeping

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** She **(had to)** four previous solo shows.
(1) has
(2) has had
(3) has been
(4) No Improvement

**87.** That must **(being)** really difficult for you.
(1) has been
(2) have been
(3) been
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Deliberately destroy something for military advantage**
(1) Devotion (2) Fidelity
(3) Sabotage (4) Ardour

**89. The area near or surrounding a particular place**
(1) Horizon (2) Vicinity
(3) Distant (4) Removed

**Dircetions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Illecitly (2) Illicitly
(3) Ilicitly (4) Illicitley

**91.** (1) Brutalety
(2) Brutality
(3) Bruttality
(4) Bruttalety

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. Then there came faint rays of primrose**
X. light that changed presently to golden
Y. bars, through which the dawn
Z. glided out across the desert
(1) ZYX (2) XYZ
(3) ZXY (4) YZX

**93. It seemed to them far easier to conceive**
X. that the water had gone down, than
Y. that solid land had risen
Z. upward into its present position
(1) XYZ (2) ZYX
(3) ZXY (4) YZX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**Gopal ran the marathon in record time.**
(1) The marathon was run by Gopal in record time.
(2) The marathon is run by Gopal in record time.
(3) Gopal in record time run the marathon
(4) Gopal in record time is running the marathon.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**Father says, "Kashmir is the heaven on earth."**
(1) Father said that Kashmir has been the heaven on earth.
(2) Father is saying that Kashmir is the heaven on earth.
(3) Father says that Kashmir is the heaven on earth.
(4) Father says that Kashmir was the heaven on earth.

**Directions (96–100) :** A passage is given with five questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Everyone expected Mary Zophres to win for her retro-revival Technicolor clothes in La La Land — the eventual winner, Colleen Atwood for Fantastic Beasts and Where to Find Them, seemed surprised too. But as other awards began to slip away from the well-reviewed musical, a theme could be teased out. What is Fantastic Beasts if not a plea for equal treatment of people, magical or otherwise? Then, Arrival, a film about the inherent benignity of aliens (read immigrants) won for Best Sound Editing. Hacksaw Ridge, which is, in a way, an anti-guns movie, won in two categories. Fences, about an African-American father who fears racial discrimination, took home the Oscar for Best Supporting Actress.

Earlier, Moonlight, featuring two minority communities (black and gay), won for Best Supporting Actor. This turned out to be one of those years the Oscar voter was underestimated. As a majority of voters are actors, there was the tendency to think they'd reward La La Land, a celebration of creation: the heroine wants to make movies, the hero wants to make jazz. It looked like the year of The Artist all over again.

**96.** Colleen Atwood won which Award?
(1) Best Costume Design for La La Land
(2) Best Supporting Actor for Fantastic Beasts and Where to Find Them
(3) Best Supporting Actor for La La Land
(4) Best Costume Design for Fantastic Beasts and Where to Find Them

**97.** What does the lead female actor in La La Land want to do?
(1) Make jazz
(2) Make movies
(3) Make music
(4) Make magic

**98.** Which of the following movies is about kindness of Aliens?
(1) Hacksaw Ridge
(2) Arrival
(3) Fences
(4) Moonlight

**99.** Why was it assumed that La La Land would win a lot of awards?
(1) Because the movie celebrates creation
(2) Because majority of voters are actors
(3) Because it is a movie about making movies and jazz
(4) Because it is a retro-revival Technicolor movie

**100.** Which movie for sure won two awards?
(1) Arrival
(2) Fences
(3) Moonlight
(4) Hacksaw Ridge

## ANSWERS

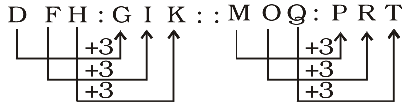
| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (1) | **3.** (1) | **4.** (1) |
| **5.** (3) | **6.** (4) | **7.** (2) | **8.** (2) |
| **9.** (2) | **10.** (4) | **11.** (4) | **12.** (3) |
| **13.** (3) | **14.** (2) | **15.** (2) | **16.** (4) |
| **17.** (4) | **18.** (2) | **19.** (1) | **20.** (3) |
| **21.** (3) | **22.** (1) | **23.** (1) | **24.** (1) |
| **25.** (3) | **26.** (1) | **27.** (4) | **28.** (1) |
| **29.** (4) | **30.** (1) | **31.** (2) | **32.** (3) |
| **33.** (2) | **34.** (1) | **35.** (3) | **36.** (3) |
| **37.** (1) | **38.** (3) | **39.** (1) | **40.** (1) |
| **41.** (2) | **42.** (2) | **43.** (2) | **44.** (3) |
| **45.** (3) | **46.** (4) | **47.** (3) | **48.** (*) |
| **49.** (3) | **50.** (4) | **51.** (4) | **52.** (1) |
| **53.** (1) | **54.** (2) | **55.** (1) | **56.** (3) |
| **57.** (2) | **58.** (2) | **59.** (4) | **60.** (3) |
| **61.** (4) | **62.** (4) | **63.** (1) | **64.** (2) |
| **65.** (1) | **66.** (3) | **67.** (4) | **68.** (3) |
| **69.** (1) | **70.** (3) | **71.** (2) | **72.** (1) |
| **73.** (1) | **74.** (3) | **75.** (4) | **76.** (3) |
| **77.** (2) | **78.** (1) | **79.** (4) | **80.** (3) |
| **81.** (1) | **82.** (4) | **83.** (3) | **84.** (1) |
| **85.** (2) | **86.** (2) | **87.** (2) | **88.** (3) |
| **89.** (2) | **90.** (2) | **91.** (2) | **92.** (2) |
| **93.** (1) | **94.** (1) | **95.** (3) | **96.** (4) |
| **97.** (2) | **98.** (2) | **99.** (2) | **100.** (4) |

## EXPLANATIONS

**1.** (2) Here, physical quantity and its property relationship has been given.
Ice is cold. Similarly steam is hot.

**2.** (1)

D F H : G I K : : M O Q : P R T




**3.** (1) (100 + 11) : (100 – 11) : : (100 + 5) : (100 – 5)
111 : 89 : : 105 : 95

**4.** (1) Except Moon, all others are planets. Moon is a satellite which revolves round the planet.

**5.** (3) D $\xrightarrow{+2}$ F $\xrightarrow{+2}$ H
K $\xrightarrow{+2}$ M $\xrightarrow{+2}$ O
S $\xrightarrow{+2}$ U $\xrightarrow{+2}$ W
But, Q $\xrightarrow{+3}$ T $\xrightarrow{+3}$ W

**6.** (4) $25 = (5)^2$
$49 = (7)^2$
$9 = (3)^2$
But, $8 = (2)^3$

**7.** (2) The last two letters of the previous word are the first two letters of the next word.

Anth [em] ⇒ [Em] pathy

**8.** (2)

D $\xrightarrow{+4}$ H $\xrightarrow{+4}$ L $\xrightarrow{+4}$ P $\xrightarrow{+4}$ T

F $\xrightarrow{+4}$ J $\xrightarrow{+4}$ N $\xrightarrow{+4}$ R $\xrightarrow{+4}$ V

E $\xrightarrow{+4}$ I $\xrightarrow{+4}$ M $\xrightarrow{+4}$ Q $\xrightarrow{+4}$ U

**9.** (2) $\frac{1}{4} = \frac{1}{4} \times \frac{5}{5} = \frac{5}{20}$

$0.65 = \frac{65}{100} = \frac{13}{20}$

$\frac{29}{20}$

$1.85 = \frac{185}{100} = \frac{37}{20}$

$\frac{1}{4}$, 0.65, ?, $\frac{29}{20}$, 1.85

or,

$\frac{5}{20}$, $\frac{13}{20}$, $\boxed{\frac{21}{20}}$, $\frac{29}{20}$, $\frac{37}{20}$,

$+\frac{8}{20}$ $+\frac{8}{20}$ $+\frac{8}{20}$ $+\frac{8}{20}$

**10.** (4) 11th April = Tuesday

Number of days from 11th April to 31st August

= 19 + 31 + 30 + 31 + 31

= 142 days

= 20 weeks + 2 days.

∴ 31st August = Tuesday + 2

= Thursday.

**11.** (4) Possible weights of combinations of boxes :

(i) 20 + 40 = 60
(ii) 20 + 60 = 80
(iii) 20 + 90 = 110
(iv) 40 + 60 = 100
(v) 40 + 90 = 130
(vi) 60 + 90 = 150
(vii) 20 + 40 + 60 = 120
(viii) 20 + 40 + 90 = 150
(ix) 20 + 60 + 90 = 170
(x) 40 + 60 + 90 = 190
(xi) 20 + 40 + 60 + 90 = 210

**12.** (3) There is no 'S' letter in the given word. Therefore, the word NAMES cannot be formed.

D [Y N] A [M I T E] ⇒ ENMITY

D [Y N A M I T E] ⇒ ANYTIME

[D Y N A] M [I T] E ⇒ DAINTY

**13.** (3)

| E | X | P | L | A | I | N |
|---|---|---|---|---|---|---|
| –3↓ | –3↓ | –3↓ | –3↓ | –3↓ | –3↓ | –3↓ |
| B | U | M | I | X | F | K |

Therefore,

| G | Y | M |
|---|---|---|
| –3↓ | –3↓ | –3↓ |
| D | V | J |

**14.** (2)

| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

$825 \times 25 - 27 \div 10 = ?$

$\Rightarrow ? = 825 \div 25 + 27 - 10$

$\Rightarrow ? = 33 + 27 - 10$

$\Rightarrow ? = 60 - 10 = 50$

**15.** (2) [× ⇒ ÷]

$9 \times 3 = 9 \div 3 = 3$

$15 \times 3 = 15 \div 3 = 5$

$60 \times 5 = 60 \div 5 = 12$

Therefore,

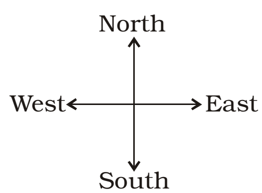
$27 \times 3 = 27 \div 3 = 9$

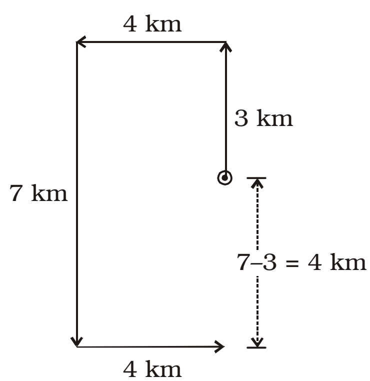
**16.** (4) $(5)^3 = 125$

$(10)^4 = 10000$

Therefore, $(2)^5 = 32$

**17.** (4)




Now, she is 4 km south of her starting position.

**18.** (2) First Premise is Particular Affirmative (I–type).

Second Premise is Universal Affirmative (A–type).

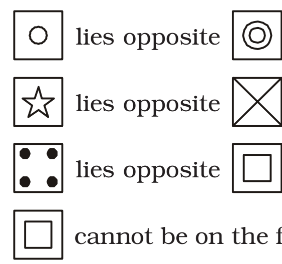
Some apples are red.

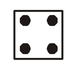
All red are oranges.

I + A ⇒ I–type of Conclusion "Some apples are oranges."

This is the Conclusion II.

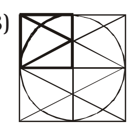
**19.** (1) After folding the figure :



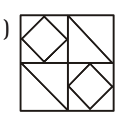

jacent to . Therefore, the cube given in the option (1) cannot be formed.

**20.** (3) Women who are Indians can be represented by letters common to the circle and the rectangle. Such letters are B and C. Women who are swimmers can be represented by the letters common to the circle and the triangle. Such letters are C and D.

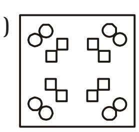
**21.** (3)



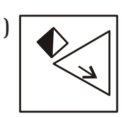
**22.** (1)



**23.** (1)



**24.** (1)



**25.** (3) M = 03, 23

A = 12

L = 11, 13, 33

E = 10, 32, 40

| Option | M | A | L | E |
|---|---|---|---|---|
| (1) | 11 | 78 | 32 | 65 |
| (2) | 43 | 01 | 23 | 67 |
| (3) | 03 | 12 | 11 | 32 |
| (4) | 11 | 02 | 43 | 76 |

**26.** (1) The current account is a country's trade balance plus net income and direct payments. The trade balance is a country's imports and exports of goods and services. The current account also measures international transfers of capital

**27.** (4) The law of demand states that other factors being constant (cetris peribus), price and quantity demand of any good and service are inversely related to each other. When the price of a product increases, the demand for the same product will fall.

**28.** (1) The Reserve Bank of India was established on April 1, 1935 in accordance with the provisions of the Reserve Bank of India Act, 1934. Though originally privately owned, since nationalisation in 1949, the Reserve Bank is fully owned by the Government of India. The Union List or List-I is a list of 97 numbered items (the last item is numbered 100) given in Seventh Schedule in the Constitution of India on which Parliament has exclusive power to legislate. Currency and coinage is listed under it.

**29.** (4) Even in regard to the State List, over which the States have exclusive jurisdiction, Parliament can assume authority, if (1) Rajya Sabha declares by a resolution supported by not less than two-thirds of the members present and voting that such legislation is in national interest, or (2) two or more States mutually agree that Parliament may do so, or (3) it is necessary to implement treaties or international conventions. Further, when a Proclamation of Emergency is in operation, Parliament is competent to legislate on matters included in the State List.

**30.** (1) According to Chola inscriptions, there were five types of 'land gifts' that Chola kings gave to their people:

- vellanvagai was land for non-Brahmana, peasant proprietors
- brahmadeya was land gifted to Brahmanas

**31.** (2) Sher Khan faced Humayun at the Battle of Chausa in June 1539. Sher Khan defeated the Mughal Emperor and assumed the royal title of Farid al-Din Sher Shah. The confrontations between Sher Shah and Humayun continued as Humayun retried to capture lost territories and the men faced each other again at Kannauj in May 1540. Sher Shah was once again successful in defeating Humayun who was forced to flee India.. He took control of the Mughal Empire and founded the Sur Empire in North India, with its capital at Delhi.

**32.** (3) Oceans are a major component of the Earth's hydrosphere and cover 71% of the Earth's surface. Of the liquid surface fresh water, 87% is contained in lakes, 11% in swamps, and only 2% in rivers. Small quantities of water also exist in the atmosphere and in living beings.

**33.** (2) If ploughing in done at right angles to the hill slope, following the natural contours of the hill, the ridges and furrows break the flow of water down the hill. This prevents excessive soil loss as gullies are less likely to develop and also reduce run-off so that plants receive more water. Thus by growing crops in contour pattern, plants can absorb much of the rain water and erosion is minimised.

**34.** (1) The ovary is a ductless reproductive gland in which the female reproductive cells are produced. Females have a pair of ovaries, held by a membrane beside the uterus on each side of the lower abdomen.

**35.** (3) Algae are a diverse group of aquatic organisms that have the ability to conduct photosynthesis. Algae are indispensable because they produce about half the oxygen in Earth's atmosphere. Algal biofuels are a promising replacement for fossil fuels. Moreover, algae are found in diverse habitats and can reproduce quickly. They also efficiently use carbon dioxide.

**36.** (3) Arthropod is any member of the phylum Arthropoda, the largest phylum in the animal kingdom, which includes such familiar forms as lobsters, crabs, spiders, mites, insects, centipedes, and millipedes. About 84 per cent of all known species of animals are members of this phylum. The distinguishing feature of arthropods is the presence of a jointed skeletal covering composed of chitin (a complex sugar) bound to protein.

**37.** (1) Uniform circular motion can be described as the motion of an object in a circle at a constant speed. As an object moves in a circle, it is constantly changing its direction. At all instances, the object is moving tangent to the circle.

**38.** (3) The image formed by Plane Mirror is is upright (erect), equal to the object in the size, laterally inverted (reversed) and the image cannot be received on a screen as it is virtual. The phenomenon due to which left-hand side of an object appears as right-hand side of the object and vice versa is called lateral inversion.

**39.** (1) The Microsoft Excel COUNTIFS function counts the number of cells in a range, that meets a single or multiple criteria. The COUNTIFS function is a built-in function in Excel that is categorized as a Statistical Function.

**40.** (1) Crystallization is a commonly used technique for the purification of substances. It is a separation technique in which solids are separated from a solution. Physical changes

occur when objects or substances undergo a change that does not change their chemical composition. Crystallization is a physical change.

**41.** (2) The reaction between baking soda (sodium bicarbonate) and vinegar (dilute acetic acid) generates carbon dioxide gas, which is used in chemical volcanoes and other projects. It can be collected and used as a simple chemical fire extinguisher. Because carbon dioxide is heavier than air, it displaces it. This starves a fire of the oxygen needed for combustion.

**42.** (2) The concentration of salt in seawater (salinity) is about 35 parts per thousand, on average. Stated in another way, about 3.5 per cent of the weight of seawater comes from the dissolved salts. The planet's freshest (least saline) sea water is in the eastern parts of Gulf of Finland and in the northern end of Gulf of Bothnia, both part of the Baltic Sea.

**43.** (2) The Shyama Prasad Mukherji Rurban Mission (SPMRM) is a scheme launched by Government of India in 2016. The Mission aims at development of rural growth clusters which have latent potential for growth, in all States and UTs, which would trigger overall development in the region. These clusters would be developed by provisioning of economic activities, developing skills & local entrepreneurship and providing infrastructure amenities. The Rurban Mission will thus develop a cluster of Smart Villages.

**44.** (3) Neon is a noble gas with symbol Ne and atomic number 10. It was discovered in 1898 by the British chemists Sir William Ramsay (1852–1916) and Morris W. Travers (1872–1961) in London. Neon gives a distinct reddish-orange glow when used in low-voltage neon glow lamps, high-voltage discharge tubes and neon advertising signs.

**45.** (3) The 2019 Cricket World Cup is the 12th edition of the Cricket World Cup, scheduled to be hosted by England and Wales from 30 May to 14 July, 2019.

**46.** (4) Gol Gumbaz is the mausoleum of king Mohammed Adil Shah, Sultan of Bijapur. The tomb, located in Bijapur, Karnataka was completed in 1656 by the architect Yaqut of Dabul.

**47.** (3) The Padma Awards are one of the highest civilian honours of India announced annually on the eve of Republic Day. The Awards are given in three categories: Padma Vibhushan (for exceptional and distinguished service), Padma Bhushan (distinguished service of higher order) and Padma Shri (distinguished service). The award seeks to recognize achievements in all fields of activities or disciplines where an element of public service is involved.

**48.** (*) Ancillary Justice is a science fiction novel by the American writer Ann Leckie.

- Air is a 2005 novel by Geoff Ryman.
- Mission Earth is science fiction novel series by L. Ron Hubbard

**49.** (3) United Nations Secretary-General António Guterres designated children's rights activist and Nobel Laureate Malala Yousafzai as a UN Messenger of Peace with a special focus on girls' education. In 2013, Yousafzai and her father, Ziauddin Yousafzai, co—founded Malala Fund to bring awareness to the social and economic impact of girls' education and to empower girls to demand change. She became the youngest ever Nobel Peace Prize laureate in 2014.

**50.** (4) South Asian Association for Regional Co-operation (SAARC), organization of South Asian nations, founded in 1985 and dedicated to economic, technological, social, and cultural development emphasizing collective self-reliance. Its seven founding members are Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka. Afghanistan joined the organization in 2007.

**51.** (4) Largest four digit number = 9999

On dividing 9999 by 81, remainder = 36

Required number = 9999 – 36 = 9963

Illustration :

```
81) 9999 (123
    81
    189
    162
     279
     243
      36
```

**52.** (1) Time taken by B to complete the work alone

$= \frac{7.5 \times 10}{10 - 7.5} = \frac{75}{2.5} = 30$ days

**53.** (1) Perimeter of rectangle

$\Rightarrow 48$ cm.

$\Rightarrow 2(l + b) = 48$

$\Rightarrow l + b = 24$

$\Rightarrow l + 10 = 24$

$\Rightarrow l = 24 - 10 = 14$ cm.

$\therefore$ Area of rectangle $= l \times b$

$= 14 \times 10 = 140$ cm$^2$.

**54.** (2) Let the marked price be Rs. $x$.

According to the question,

= 80% of $x = 1000$

$\Rightarrow \frac{x \times 80}{100} = 1000$

$\Rightarrow x = \frac{1000 \times 100}{80} =$ Rs.1250

**55.** (1) A = 2B = 4C

$\Rightarrow \frac{A}{4} = \frac{2B}{4} = \frac{4C}{4}$

$\Rightarrow \frac{A}{4} = \frac{B}{2} = \frac{C}{1}$

$\therefore$ A : B : C = 4 : 2 : 1

**56.** (3) New average

$= \frac{4 \times 1250 + 2000}{5}$

$= \frac{7000}{5} =$ Rs.1400

**57.** (2) $\frac{\text{First SP}}{\text{Second SP}} = \frac{100 - \text{Loss \%}}{100 + \text{Gain\%}}$

$\Rightarrow \frac{24}{36} = \frac{100-20}{100+\text{Gain \%}}$

$\Rightarrow 100 + \text{Gain \%} = \frac{36 \times 80}{24}$

$= 120$

$\therefore$ Gain % = 120 – 100 = 20%

**58.** (2) Let 0.25% of $x = 20$

$\Rightarrow \frac{x \times 0.25}{100} = 20$

$\Rightarrow x = \frac{20 \times 100}{0.25}$

$\Rightarrow x = \frac{20 \times 100 \times 100}{25} = 8000$

**59.** (4) Distance = Speed × Time

$= 40 \times \frac{25}{60} = \frac{50}{3}$ km

Required speed $= \frac{\frac{50}{3}}{\frac{20}{60}} = \frac{50}{3} \times 3$

= 50 km/hr

$\therefore$ Increase in speed = 50 – 40 = 10 km/hr

**60.** (3) According to the question, We have to find the amount of Rs. 1240 in 1 year.

$\therefore$ C.I. for fourth year

$= 1240\left(1 + \frac{9}{100}\right)$

$= \text{Rs.}\left(1240 \times \frac{109}{100}\right)$

= Rs. 1351.6

**61.** (4) $\frac{-3}{2} + \frac{2}{3}(3x+9) = \frac{x}{2}$

$\Rightarrow \frac{-3}{2} + 2x + 6 = \frac{x}{2}$

$\Rightarrow 2x - \frac{x}{2} = \frac{3}{2} - 6$

$\Rightarrow \frac{4x - x}{2} = \frac{3-12}{2}$

$\Rightarrow 3x = -9$

$\Rightarrow x = \frac{-9}{3} = -3$

**62.** (4) $a - b = 2$, $ab = 8$

$\therefore a^3 - b^3 = (a-b)^3 + 3ab(a-b)$

$= (2)^3 + 3 \times 8\ (2)$

$= 8 + 48 = 56$

**63.** (1) Let the number be $x$.
According to the question,

$x = \frac{7}{x} + 9.3$

$\Rightarrow x - \frac{7}{x} = \frac{93}{10}$

$\Rightarrow \frac{x^2 - 7}{x} = \frac{93}{10}$

$\Rightarrow 10x^2 - 93x - 70 = 0$

$\Rightarrow 10x^2 - 100x + 7x - 70 = 0$

$\Rightarrow 10x(x - 10) + 7(x - 10) = 0$

$\Rightarrow (x - 10)(100x + 7) = 0$

$\Rightarrow x = 10$ as $x \neq \frac{-7}{100}$

**64.** (2) $S_n = \frac{n}{2}(a + l)$ where

$a$ = first term.

$l$ = last term.

$\therefore S_{12} = \frac{12}{2}(3 + 47)$

$= 6 \times 50 = 300$

**65.** (1) P $(a,b)$ first reflects at origin on $P_1$.

$\therefore$ Co-ordinates of $P_1 = (-a,-b)$

Again $P_1$, reflects on $y$–axis.

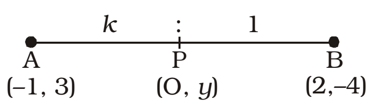
$\therefore$ Co-ordinate of $P_1' = (a, -b)$

$\therefore (a, -b) = (4, -3)$

$\Rightarrow a = 4,\ b = 3$

$\therefore$ Coordinates of P = (4, 3)

**66.** (3)




Let P $(0, y)$ divides line segment AB in the ratio $k:1$

$\therefore \frac{k(2) + 1(-1)}{k+1} = 0$

$\Rightarrow 2k - 1 = 0$

$\Rightarrow 2k = 1$

$\Rightarrow k = \frac{1}{2}$

$\therefore$ Required ratio = 1: 2

**67.** (4) $2x + 3y = 12$

Transforming it into the form of $y = mxtc$,

$\Rightarrow 3y = -2x + 12$

$\Rightarrow y = \frac{-2}{3}x + 4$

Slope of the line $= m = \frac{-2}{3}$

**68.** (3) $\Delta XYZ \sim \Delta PQR$

$\therefore \frac{\text{Area of } \Delta XYZ}{\text{Area of } \Delta PQR} = \frac{(XY)^2}{(PQ)^2}$

$\Rightarrow \frac{100}{25} = \frac{(XY)^2}{4^2}$

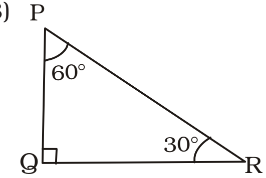
$\Rightarrow (XY)^2 = \frac{100 \times 16}{25} = 64$

$\therefore XY = \sqrt{64} = 8$ cm.

**69.** (1) sec30° + tan60°

$= \frac{2}{\sqrt{3}} + \sqrt{3} = \frac{2+3}{\sqrt{3}} = \frac{5}{\sqrt{3}}$

**70.** (3)




$\cot P = \cot 60° = \frac{1}{\sqrt{3}}$

**71.** (2) $\sec\theta = \frac{5}{3}$

$\therefore \cos\theta = \frac{3}{5}$

$\therefore \sin\theta = \sqrt{1 - \cos^2\theta}$

$= \sqrt{1 - \frac{9}{25}} = \sqrt{\frac{25-9}{25}}$

$= \sqrt{\frac{16}{25}}$

$\therefore \sin\theta = \frac{4}{5}$

$\therefore \text{cosec}\theta = \frac{5}{4} = 1.25$

**72.** (1) Partner C has lowest share of 5%.

**73.** (1) E's share = 40%
Share of F, A and B
= (10 + 20 +10)% = 40%
So, E's share is equal to the combined shares of F, A and B.

**74.** (3) Share of E and B
= 40% + 10% = 50%
Shares of A, C, D and F
= (20 + 5 + 15 + 10)% = 50%

Required ratio = $\frac{50}{50} = \frac{1}{1}$

= 1 : 1

**75.** (4) D's share

= $\frac{15\% \text{ of } 20,00000}{2}$

= $\frac{20,00000 \times 15}{100 \times 2}$

= Rs. 1,50,000

**76.** (3) **Above (Preposition)** = at a higher level
He looked from his flat above the corner shop.
**Up (Perposition)** = from a lower to a higher level.
She climbed up a flight of stairs.
So correct expression ⇒ nearly a foot above the others

**77.** (2) **In front of (Preposition)** = in a position just ahead or at the front part of someone or something else.
**Look at the sentence :**
There is a lawn in front of the house.
So, correct expression – the car in front of the house.....

**78.** (1) **Advise (Verb)** = guide, give guidance
**Speak/say (Verb)** = talk; utter; state
**Listen (Verb)** = hear; pay attention.

**79.** (4) **Alike (Adverb)** = in the same or a similar way; similarly.
**Look at the sentence :**
The girls dressed alike in black trousers and jackets.

**80.** (3) **Fissure/cleavage (Noun)** – opening; crack; cleft.
**Look at the sentence :**
Bacteria survive around fissures in the deep ocean floor.
**Agglutinate (Verb)** – firmly stick or be stuck together.
**Blend (Verb)** = mix; mingle; combine
**Entwine (Verb)** = wind round; twist round; coil round.

**81.** (1) **Morbid/ghastly (Adjective)** = gruesome; horrible
**Look at the sentence :**
His morbid fascination with the horrors of contemporary warfare.
**Animated (Adjective)** = lively; spirited; high–spirited
**Buoyant (Adjective)** = able to float; floating.
**Jaunty (Adjective)** = cheerful; cheery; merry.

**82.** (4) **Dormancy/Abeyance;/latency (Noun)** = suspension; remission
**Look at the sentence :**
Matters were held in abeyance.
**Continuation (Noun)** = continuance; prolongation.
**Look at the sentence :**
The continuation of discussions about a permanent place.
**Quiescence (Noun)** = state of quietness or inactivity.

**83.** (3) **Jejune/inexperience/Callow (Adjective)** = immature; naive Earnest and callow undergraduates.
**Sophisticated (Adjective)** = worldly; experienced; cultivated
A chic sophisticated woman.
**Juvenile (Adjective)** = relating to young people.

**84.** (1) **To be an irritant**
**Look at the sentence :**
Your voice is really getting on my nerves.

**85.** (2) **To keep something a secret**
**Look at the sentence :**
I will tell you about it if you promise to keep it under your hat.

**86.** (2) **Has had**
It is Present Pefect Tense as the work is finished. It is formed as follows :
Sub + has + $V_3$ + object
Here, has is a helping (auxiliary) verb and had its past participle.
'has' is both a helping verb and a main verb, such as
⇒ I have a cow. (Here, have is a main verb)
**Its three forms are :** has/have had ...... had
⇒ I have finished my work. (Here, 'have' is a helping verb and 'finished' is past participle).
- I have a lot of homework this week.
**Note :** It is a completed event as there is no expectation of more homework or because the week is over.
- I have had a lot of homework this week.
**Note :** Here, I connect an event from the past that has some connection to the present. It is possible that I might have more homework, maybe on Wednesday or in the middle of the week.

**87.** (2) **Have been**
must have + $V_3$ → used for expressing conviction or certainty on the part of the speaker.
**Look at the sentence :**
He must have reached the town by now.

**88.** (3) **Devotion/fidelity (Noun)** = faithfulness; loyalty.
**Ardour (Noun)** = passion; avidity; fervour

**89.** (2) **Horizon (Noun)** = skyline; range of vision
**Distant (Adjective)** = far away; far-off
**Removed (Adjective)** = detached; unfastened.

**90.** (2) Correct spelling is : Illicitly (= in a way that is contrary to or forbidden by law, rules or custom).

**91.** (2) Correct spelling is : Brutality (= cruelty, wickedness).

**94.** (1) The marathon was run by Gopal in record time.
It is active voice of simple Past tense.
Its passive voice is formed as follows :
Subject + was/were + $V_3$ + by + object.

**95.** (3) Father says that Kashmir is the heaven on earth.
It is direct speech of an assertive sentence which contains a universal truth.
Its indirect speech is formed as follow :
⇒ No change in tense inside the inverted commas.
⇒ 'that' as connector is used

SET 39

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 22.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Alive : Dead :: Question : ?
(1) Options (2) Answer
(3) Right (4) Ask

**2.** Select the related letters from the given alternatives :
CAE : XZV :: JHL : ?
(1) QSO (2) IGK
(3) PRU (4) GEI

**3.** Select the related number from the given alternatives :

$2.25 : \frac{13}{4} :: 3.75 : ?$

(1) $\frac{17}{4}$ (2) $\frac{19}{4}$

(3) $\frac{15}{4}$ (4) $\frac{11}{4}$

**4.** Select the odd word from the given alternatives :
(1) Book
(2) Tyre
(3) Bangle
(4) Compact disk

**5.** Select the odd letters from the given alternatives :
(1) NML (2) EDC
(3) QRS (4) WVU

**6.** Select the odd number from the given alternatives :
(1) 18 (2) 45
(3) 54 (4) 55

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.
master, ember, bombay, animal, abdomen, ?
(1) money (2) ambush
(3) deform (4) crime

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
AbCdE, DeFgH, GhIjK, JkLmN, ?
(1) OpQrS (2) NoPqR
(3) MnOpQ (4) LmNoP

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.
4, 5.2, 6.4, ?, 8.8
(1) 7 (2) 8
(3) 7.6 (4) 8.25

**10.** Bobby's birthday is on Monday 5th June. On what day of the week will be Pinky's birthday in the same year if Pinky was born on 22nd September?
(1) Saturday (2) Wednesday
(3) Friday (4) Sunday

**11.** The weights of 4 boxes are 10, 40, 50 and 80 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 120 (2) 100
(3) 90 (4) 110

**12.** From the given alternative words, select the word which cannot be formed using the letters of the given word :
**ELABORATE**
(1) BRUTAL (2) RELATE
(3) EARLOBE (4) BERATE

**13.** If MARBLES is coded as PDUEOHV, then how will GIN be coded as?
(1) SEG (2) BHU
(3) WGI (4) JLQ

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
54 × 9 – 3 ÷ 4 = ?
(1) 10 (2) 5
(3) 2 (4) 8

**15.** If 14 % 32 = 46, 52 % 20 = 72 then what is the value of 35 % 14 = ?
(1) 39 (2) 29
(3) 19 (4) 49

**16.** Select the missing number from the given alternatives :

| 36 | 45 | 105 |
|---|---|---|
| 12 | 9 | ? |
| 3 | 5 | 7 |

(1) 112 (2) 98
(3) 15 (4) 5

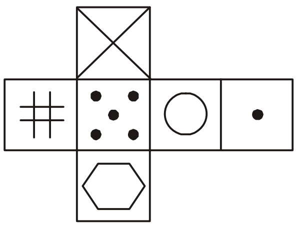
**17.** Anu and Bittu start from the same point. Anu walks 35 m South, then turns West and walks 15 m, then turns to his right and walks 45 m. At the same time, Bittu walks 25 m North, then turns to his left and walks 15 m. Where is Bittu now with respect to the position of Anu?
(1) Bittu is 95 m to the North of Anu
(2) Bittu is 15 m to the South of Anu
(3) Bittu is 15 m to the North of Anu
(4) Bittu is 95 m to the South of Anu

**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.
**Statement :**
Should sale of alcohol near highways be banned?
**Arguments :**
I. No, people should have freedom to decide as it is their fundamental right.
II. Yes, 90% of road accidents involve drivers who are under influence of alcohol.

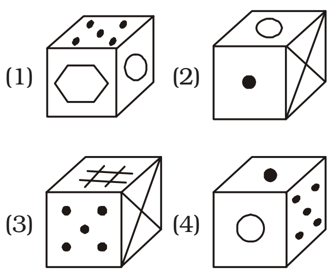
(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure ?

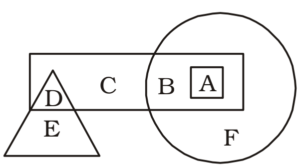
**Question Figure :**



**Answer Figures :**



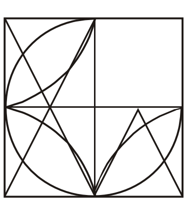
**20.** In the following figure, square represents doctors, triangle represents artists, circle represents weight-lifters and rectangle represents Russians. Which set of letters represents Russians who are not doctors?



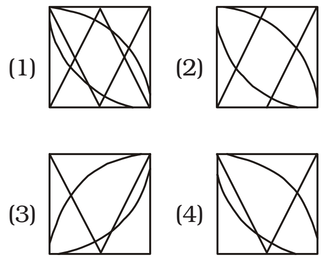

(1) A (2) E, F, A
(3) A, B, C (4) B, C, D

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**

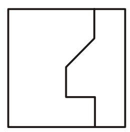


**Answer Figures :**

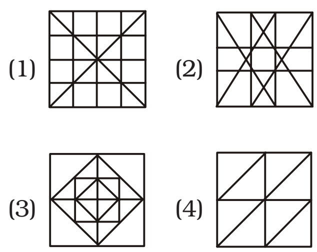


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

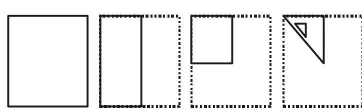


**Answer Figures :**

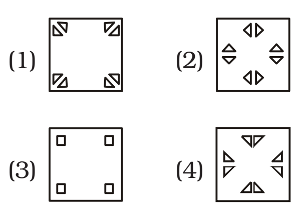


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

**Question Figures :**

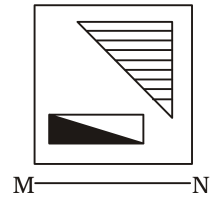


**Answer Figures :**

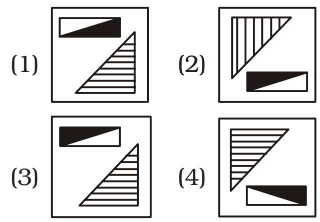


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 03, 14 etc. and 'Z' can be represented by 58, 69 etc. Similarly, you have to identify the set for the word **'FUEL'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | I | C | L | K | J |
| 1 | C | J | I | I | K |
| 2 | H | F | E | I | A |
| 3 | F | I | L | H | B |
| 4 | D | G | G | B | D |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | U | N | N | Z | S |
| 6 | S | O | U | T | Z |
| 7 | W | T | P | V | O |
| 8 | V | Y | U | Y | P |
| 9 | T | R | V | Z | O |

(1) 21, 55, 22, 02
(2) 56,12, 87, 22
(3) 23, 45, 12, 22
(4) 11, 02, 32, 65

## GENERAL AWARENESS

**26.** The demand for a normal good decreases with _______ in the consumer's income.
(1) increase (2) decrease
(3) constant (4) double

**27.** Short run marginal cost curve cuts the short run average cost curve from _______ at the minimum point of short run average cost.
(1) top (2) below
(3) right (4) left

**28.** "Naval, military and air force works" is listed in the ________ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** There are total ________ parliamentary seats (Lok Sabha constituency) in Uttarakhand.
(1) 14 (2) 5
(3) 80 (4) 2

**30.** ________first became the capital of a kingdom under the Tomara Rajputs.
(1) Delhi (2) Pataliputra
(3) Calcutta (4) Taxila

**31.** Noor Jahan was the wife of which Mughal emperor?
(1) Babur
(2) Akbar
(3) Shah Jahan
(4) Jahangir

**32.** ________ resources are those resources whose quantity is known.
(1) Natural resources
(2) Actual resources
(3) Potential resources
(4) Abiotic resources

**33.** The main mineral constituents of the continental mass are _______ and alumina.
(1) iron oxide (2) silica
(3) water (4) oxygen

**34.** Among plants, three different genera Solanum, Petunia and Datura are placed in which family?
(1) Cancidae (2) Solanaceae
(3) Felis (4) Felidae

**35.** The members of chlorophyceae are commonly called _____ algae.
(1) Green (2) Brown
(3) Red (4) Yellow

**36.** The body cavity which is lined by mesoderm is called
(1) Coelom
(2) Chordata
(3) Arthropoda
(4) Platyhelminthes

**37.** Convex and concave mirrors are examples of?
(1) Plane mirrors
(2) Spherical mirrors
(3) Inverted mirror
(4) Erect mirror

**38.** The frictional force exerted by fluids is also called _______.
(1) drag (2) buoyancy
(3) upthrust (4) convection

**39.** Using ________ one can resize, tag digital images, organise pictures into albums by drag and drop, can export the pictures for external use (by e-mail or print).
(1) Data Organiser
(2) Facebook Organiser
(3) Image Organiser
(4) Media Organiser

**40.** A change in which one or more new substances are formed is called ________.
(1) Physical Change
(2) Chemical Change
(3) Rusting
(4) Galvanisation

**41.** The property of metals by which they can be beaten into thin sheets is called ________.
(1) ductility
(2) malleability
(3) viscosity
(4) tensile strength

**42.** ________ is the number of individuals of the same species that have come into the habitat from elsewhere during the time period under consideration.
(1) Natality
(2) Mortality
(3) Immigration
(4) Emigration

**43.** _______ scheme by the Central Government states that an insurance of 10 lakhs will cover each passenger traveling by Indian Rail while booking a ticket if an amount of 92 paise is paid.
(1) Gangajal Delivery Scheme
(2) Mission Bhagiratha In Telangana
(3) National Apprenticeship Promotion
(4) Railway Travel Insurance

**44.** Who discovered electricity and invented the lightning rod and bifocals?
(1) Kirkpatrick Macmillan
(2) Benjamin Franklin
(3) William Henry Fox Talbot
(4) Sir Alexander Fleming

**45.** Which country will be hosting 2018 Men's Hockey World Cup?
(1) Pakistan
(2) Malaysia
(3) Australia
(4) India

**46.** Who was the architect of Humayun's Tomb?
(1) Ustad Ahmad of Lahouri
(2) George Wittet
(3) Mirak Mirza Ghiyath
(4) Yaqut of Dabul

**47.** Which of the following award is to recognize distinguished service of a high order to the nation?
(1) Padma Bhushan
(2) Param Vir Chakra
(3) Padma Vibhushan
(4) Bharat Ratna

**48.** Which of the statements given below are correct?
1. The author of the novel 'A Head Full of Ghosts' is M.R Carey.
2. The author of the novel 'The Cartel' is Don Winslow.
3. The author of the novel 'Dodgers' is Bill Beverly.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** In April 2017, Emma Morano, the world's oldest woman has passed away at the age of 117. Which country was she from?
(1) Italy (2) France
(3) China (4) Germany

**50.** Bangladesh does not share its border with which Indian state?
(1) Assam
(2) Tripura
(3) Jharkhand
(4) Meghalaya

## QUANTITATIVE APTITUDE

**51.** What least number must be subtracted from 210, so that the remainder is completely divisible by 11?
(1) 2 (2) 3
(3) 4 (4) 1

**52.** A can paint a house in 25 days and B can do it in 10 days. Along with C, they did the job in 6.25 days only. Then in how many days, C alone can do the job?
(1) 50 (2) 40
(3) 30 (4) 60

**53.** What is the area (in sq. cm.) of a regular hexagon of side 6 cm?
(1) $27\sqrt{3}$ (2) $54\sqrt{3}$
(3) 54 (4) 27

**54.** If 1 saree is offered free on purchase of three sarees, what is the effective discount on each saree?
(1) 20% (2) 30%
(3) 25% (4) 40%

**55.** The ratio of present ages of R and S is 6 : 7. 12 years ago the ratio of their ages was 9 : 11. What is R's present age (in years)?
(1) 56 (2) 48
(3) 36 (4) 44

**56.** The average marks of 10 students in an examination were 25. It was later found that the marks of one student had been wrongly entered as 34 instead of 43. What is the correct average?
(1) 25.5 (2) 24.1
(3) 24.5 (4) 25.9

**57.** A wholesaler sells a jacket to a retailer at a profit of 25% and the retailer sells it to a customer at a profit of 20%. If the customer pays Rs. 2,400, what had it cost (in Rs.) the wholesaler?
(1) 2000 (2) 1600
(3) 1800 (4) 2250

**58.** When a number is increased by 24, it becomes 104% of itself. What is the number?
(1) 300 (2) 100
(3) 600 (4) 1200

**59.** If a boat goes a certain distance at 30 km/h and comes back the same distance at 20 km/hr, what is the average speed (in km/hr) for the total journey?
(1) 25 (2) 24.5
(3) 24 (4) 25.5

**60.** A sum fetched a total simple interest of Rs. 1200 at the rate of 7.5% per annum in 4 years. What is the sum (in Rs.)?
(1) 4000 (2) 6000
(3) 8000 (4) 7500

**61.** If $-3\left[1-\left(\frac{x}{2}\right)\right]+\frac{5x}{3}=\frac{1}{6}$, then what is the value of $x$?
(1) 2 (2) –1
(3) 1 (4) –2

**62.** If $a + b = 3$ and $ab = -4$, then what is the value of $(a^3 + b^3)$?
(1) 36 (2) 63
(3) 12 (4) –15

**63.** The sum of a non-zero number and 9 times its reciprocal is 10. What is the number?
(1) 10 (2) 11
(3) 9 (4) 90

**64.** If the 1st term and the 3rd term of an arithmetic progression are –10 and –4, what is the 12th term?
(1) 26 (2) 20
(3) 17 (4) 23

**65.** What is the reflection of the point (2, –3.5) in the $y$-axis?
(1) (–2, 3.5)
(2) (–2, –3.5)
(3) (–3.5, –2)
(4) (3.5, –2)

**66.** Point A divides segment BC in the ratio 1 : 3. The co-ordinates of B are (4, –4) and that of C are (0, 6). What are the co-ordinates of point A?
(1) (–3, 1.5)
(2) (–1.5, 3)
(3) (3, –1.5)
(4) (1.5, 3)

**67.** What is the slope of the line parallel to the line passing through the points (–2, –1) and (4, –3)?
(1) $\frac{1}{3}$ (2) $-\frac{1}{3}$
(3) –3 (4) 3

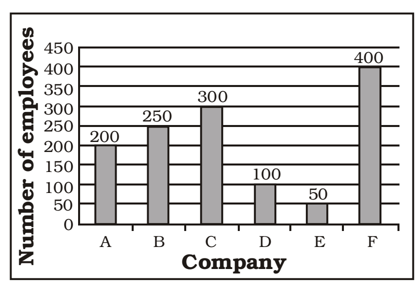
**68.** ΔXYZ is similar to ΔPQR. If the ratio of perimeters of ΔXYZ : ΔPQR is 3 : 2 and PQ = 6 cm then what is the length of XY (in cm)?
(1) 4 (2) 8
(3) 12 (4) 9

**69.** sec 45° + tan 30° = ?
(1) $\frac{(\sqrt{6}+1)}{\sqrt{3}}$ (2) $\frac{(1+\sqrt{3})}{2}$
(3) $\frac{(\sqrt{3}+2)}{\sqrt{3}}$ (4) $\frac{5}{\sqrt{3}}$

**70.** ΔDEF is right angled at E. If $m\angle D = 45°$, then cosec F = ?
(1) $\frac{1}{2}$ (2) $\frac{1}{\sqrt{2}}$
(3) $\sqrt{2}$ (4) $\frac{1}{\sqrt{3}}$

**71.** If $\cos\theta = \frac{5}{13}$, then cosec θ = ?
(1) $\frac{5}{12}$ (2) $\frac{12}{5}$
(3) $\frac{13}{5}$ (4) $\frac{13}{12}$

**Directions (72–75) :** The bar-graph shows the number of employees working in six different companies. Study the diagram and answer the following questions.




**72.** What is the difference in number of employees of company D and company A?
(1) 100 (2) 50
(3) 150 (4) 200

**73.** If an insurance agent gets to sell policies to all employees of companies B, D and F, then how many policies does he sell?

(1) 750 (2) 650
(3) 800 (4) 700

**74.** The number of employees in company E is lower than those of company B by :
(1) 60% (2) 80%
(3) 40% (4) 20%

**75.** If Company B's department which employs 20% of its employees is sold off to company F, then company F will now have how many employees?
(1) 400 (2) 450
(3) 500 (4) 550

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The sailors divided their (1)/ money around themselves and (2)/ the ship sailed on. (3)/No Error (4)

**77.** Thank you for (1)/ getting me (2)/ of the hook. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** It took several men to ________ the fallen tree out of our yard.
(1) erect (2) establish
(3) haul (4) rivet

**79.** If you write a forty-page essay in one night, you'll accomplish a huge _______.
(1) treat (2) feat
(3) fleet (4) beat

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Whine**
(1) Gratification
(2) Luxury
(3) Thrill
(4) Gripe

**81. Requisite**
(1) Peripheral
(2) Deadwood
(3) Trivial
(4) Precondition

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Dominate**
(1) Surrender
(2) Prevail
(3) Dictate
(4) Command

**83. Squander**
(1) Frivol (2) Dissipate
(3) Hoard (4) Expend

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Go for a song**
(1) One's favourite music
(2) Happy go lucky attitude
(3) To be sold cheaply
(4) Something which is prohibitively expensive

**85. Make an ass out of**
(1) Cause someone or oneself to look foolish or stupid
(2) Work very hard like a donkey
(3) Be smart but act dumb
(4) Make a mistake

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** I would love to come to your party! Thank you for **(invites)** me.
(1) invited
(2) invite
(3) inviting
(4) No Improvement

**87.** It must **(being)** quite an exciting time to be alive.
(1) has been
(2) have been
(3) been
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Full of twists and turns**
(1) Tortuous (2) Smooth
(3) Cinch (4) Facile

**89. The practice of magic**
(1) Palpable
(2) Witchery
(3) Substantial
(4) Corporal

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) andulate
(2) undulate
(3) undulete
(4) andulete

**91.** (1) revelars
(2) rewellers
(3) revellers
(4) rewelers

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. We drank a little and flung**
X. soon were all asleep
Y. sand, thoroughly tired out, and
Z. ourselves down on the
(1) ZXY (2) YZX
(3) YXZ (4) ZYX

**93. Aqueous rocks of equal**
X. exhibit in like manner a stratification nearly undisturbed
Y. over the lake-district of North America, and
Z. antiquity extend for hundreds of miles
(1) ZYX (2) ZXY
(3) YZX (4) YXZ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**The class is required to watch a video tutorial every day.**

(1) A video tutorial is required to be watched by the class everyday.

(2) A video tutorial is watched by the class every day.

(3) Every day the class watches a required video tutorial.

(4) Every day the class is watching a required video tutorial.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**My father said, "Prices are shooting up alarmingly."**

(1) My father says that prices shoot up alarmingly.

(2) My father says that the price was shooting up a larmingly.

(3) My father says that prices shot up alarmingly.

(4) My father said that the prices were shooting up alarmingly.

**Directions (96–100) :** A passage is given with five questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Many plays and films have depicted the life story of Gautama Buddha, but what made the musical play The Way Across unique was its regional focus. Directed by G. Kumara Swamy, the play adapted from the book Telangana lo Buddhism focused on the enlightenment of a cursed Brahmin Bawari and his 16 curious disciples willing to understand the deeper truths of birth, death, rebirth and brotherhood.

From the impressive use of projector visuals, music and shadow-play, there was every effort to lend authenticity to the theme. Despite the play's focus on Telangana, the native essence was compromised, due to the English rendition (done for a wider reach). The lines appeared jaded with literal translations. The honest performances from the crew impacted only on a surface-level. Kiran Kumar's Bawari act and Krishna Chaitanya Joshi as Pingiya (said to have propagated Buddhism from Telangana to several regions across South India) grab your attention.

**96.** What was sacrificed to keep the play in English?

(1) A wide audience

(2) Authenticity

(3) Depiction of reality

(4) A bit of native essence

**97.** What was unique about the play, 'The Way Across'?

(1) Story line

(2) Regional focus

(3) It was a musical

(4) It was in English

**98.** Kiran Kumar played the role of the ____________.

(1) Buddha's disciple

(2) Gautama Buddha

(3) Pingiya

(4) Cursed Brahmin Bawari

**99.** Who helped spread Buddhism to South India?

(1) Bawari

(2) Buddha's 16 disciples

(3) Telangana Buddhists

(4) Pingiya

**100.** Who directed the play, 'The Way Across'?

(1) Kiran Kumar

(2) G. Kumara Swamy

(3) Chaitanya Joshi

(4) Bawari

## ANSWERS

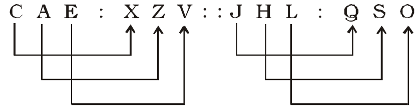
| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (1) | **3.** (2) | **4.** (1) |
| **5.** (3) | **6.** (4) | **7.** (3) | **8.** (3) |
| **9.** (3) | **10.** (3) | **11.** (4) | **12.** (1) |
| **13.** (4) | **14.** (2) | **15.** (4) | **16.** (3) |
| **17.** (3) | **18.** (2) | **19.** (4) | **20.** (4) |
| **21.** (4) | **22.** (1) | **23.** (1) | **24.** (3) |
| **25.** (1) | **26.** (2) | **27.** (2) | **28.** (1) |
| **29.** (2) | **30.** (1) | **31.** (4) | **32.** (2) |
| **33.** (2) | **34.** (2) | **35.** (1) | **36.** (1) |
| **37.** (2) | **38.** (1) | **39.** (3) | **40.** (2) |
| **41.** (2) | **42.** (3) | **43.** (4) | **44.** (2) |
| **45.** (4) | **46.** (3) | **47.** (1) | **48.** (2) |
| **49.** (1) | **50.** (3) | **51.** (4) | **52.** (1) |
| **53.** (2) | **54.** (3) | **55.** (2) | **56.** (4) |
| **57.** (2) | **58.** (3) | **59.** (3) | **60.** (1) |
| **61.** (3) | **62.** (2) | **63.** (3) | **64.** (4) |
| **65.** (2) | **66.** (3) | **67.** (2) | **68.** (4) |
| **69.** (1) | **70.** (3) | **71.** (4) | **72.** (1) |
| **73.** (1) | **74.** (2) | **75.** (2) | **76.** (2) |
| **77.** (3) | **78.** (3) | **79.** (2) | **80.** (4) |
| **81.** (4) | **82.** (1) | **83.** (3) | **84.** (3) |
| **85.** (1) | **86.** (3) | **87.** (2) | **88.** (1) |
| **89.** (2) | **90.** (2) | **91.** (3) | **92.** (4) |
| **93.** (1) | **94.** (1) | **95.** (4) | **96.** (4) |
| **97.** (2) | **98.** (4) | **99.** (4) | **100.** (2) |

## EXPLANATIONS

**1.** (2) Alive and Dead are antonymous to each other opposite word. Similarly, Question and Answer are antonymous to each other.

**2.** (1) Pairs of opposite letters.

C A E : X Z V : : J H L : Q S O



**3.** (2) $2.25 \Rightarrow \frac{225}{100} + 1$

$$= \frac{225+100}{100} = \frac{325}{10} = \frac{13}{4}$$

Similarly,

$3.75 \Rightarrow \frac{375}{100} + 1$

$= \frac{375+100}{100} = \frac{475}{100} = \frac{19}{4}$

**4.** (1) Except book, all others are circular in shape. The shape of a book is cuboid.

**5.** (3) $N \xrightarrow{-1} M \xrightarrow{-1} L$

$E \xrightarrow{-1} D \xrightarrow{-1} C$

$W \xrightarrow{-1} V \xrightarrow{-1} U$

But, $Q \xrightarrow{+1} R \xrightarrow{+1} S$

**6.** (4) Except the number 55, all others are multiples of 3.

18 = 3 × 6

45 = 3 × 15

54 = 3 × 18

But, 55 = 5 × 11

**7.** (3) If the previous word contains even number of letters, the next word starts with the fifth letter of that word. If the previous word contains odd number of letters, next word starts with the third letter of that word.

*abdomen* ⇒ 7 letters

Its third letter is '*d*'

Therefore, '*deform*' is the right answer.

**8.** (3) Each term contains five letters. The letters at even numbered positions are small letters. The next term starts with the second last letter of the previous term. Therefore,

J*k*L*m*N ⇒ M*n*O*p*Q

**9.** (3) 4 5.2 6.4 [7.6] 8.8

+1.2 +1.2 +1.2 +1.2

**10.** (3) 5th June = Monday

Number of days from 5th June to 22nd September

= 25 + 31 + 31 + 22 = 109 days

= 15 weeks + 4 days

∴ 22nd September = Monday + 4 = Friday.

**11.** (4) Possible weights of combinations of boxes :

(i) 10 + 40 = 50

(ii) 10 + 50 = 60

(iii) 10 + 80 = 90

(iv) 40 + 50 =90

(v) 40 + 80 = 120

(vi) 50 + 80 = 130

(vii) 10 + 40 + 50 = 100

(viii) 10 + 40 + 80 = 130

(ix) 10 + 50 + 80 = 140

(x) 40 + 50 + 80 = 170

(xi) 10 + 40 + 50 + 80 = 180

**12.** (1) There is no 'U' letter in the given word. Therefore, the word BRUTAL cannot be formed.

[E L A] B O [R] A [T E] ⇒ RELATE

[E L A B O R] A T [E] ⇒ EARLOBE

[E] L A [B] O [R A T E] ⇒ BERATE

**13.** (4)

| M | A | R | B | L | E | S |
|---|---|---|---|---|---|---|
| +3↓ | +3↓ | +3↓ | +3↓ | +3↓ | +3↓ | +3↓ |
| P | D | U | E | O | H | V |

Therefore,

| G | I | N |
|---|---|---|
| +3↓ | +3↓ | +3↓ |
| J | L | Q |

**14.** (2)

| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

54 × 9 – 3 ÷ 4 = ?

⇒ ? = 54 ÷ 9 + 3 – 4

⇒ ? = 6 + 3 – 4 = 5

**15.** (4) 14 % 32 = 14 + 32 = 46

52 % 20 = 52 + 20 = 72

Therefore,

35 % 14 = 35 + 14 = 49

**16.** (3) 3 × 12 = 36

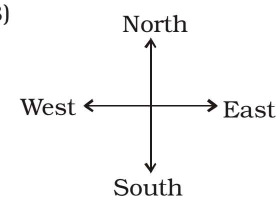
5 × 9 = 45

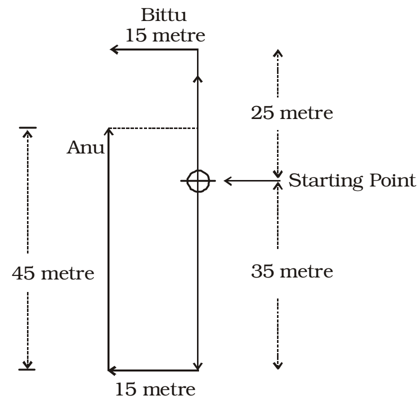
Therefore,

7 × ?= 105

$\Rightarrow ? = \frac{105}{7} = 15$

**17.** (3)



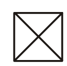

35 + 25 – 45 = 60 – 45

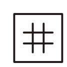
= 15 metre

Bittu is 15 metre to the North of Anu.

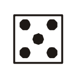
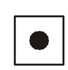
**18.** (2) Clearly, only argument II holds strong. Most of the accidents occur due to drunken driving.

**19.** (4) After folding the figure :

 lies opposite .

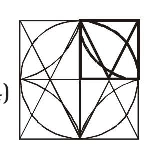
 lies opposite .

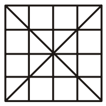
lies opposite .

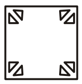
 cannot be on face adjacent to . Therefore, the cube given in the option (4) cannot be formed.

**20.** (4) Russians who are not doctors can be represented by letters present in the rectangle but outside the square. Such letters are B, C and D.

**21.** (4)



**22.** (1) 

**23.** (1) 

**24.** (3)

**25.** (1) F = 21, 30
U = 55, 67, 87
E = 22
L = 02, 32

| Option | F | U | E | L |
|---|---|---|---|---|
| (1) | 21 | 55 | 22 | 02 |
| (2) | 56 | 12 | 87 | 22 |
| (3) | 23 | 45 | 12 | 22 |
| (4) | 11 | 02 | 32 | 65 |

**26.** (2) In economics, normal goods are any goods for which demand increases when income increases, and falls when income decreases but price remains constant, i.e. with a positive income elasticity of demand.

**27.** (2) Short-run marginal cost refers to the change in cost that result from a change in output when the usage of the variable factor changes. Short-run marginal cost curve cuts the average variable cost curve from below at the minimum point of average variable cost.

**28.** (1) Naval, military and air forces; any other armed forces of the Union are listed under the Union List. The Union List or List–I is a list of 97 numbered items (the last item is numbered 100) given in Seventh Schedule in the Constitution of India on which Parliament has exclusive power to legislate.

**29.** (2) Uttarakhand elects 5 members to Lok Sabha and 3 seats to Rajya Sabha of the Indian Parliament.

**30.** (1) The Tomara were an Indian dynasty who ruled parts of present–day Delhi and Haryana during 9th–12th century. They were displaced by the Chahamanas (Chauhans) in 12th century.

**31.** (4) Nur Jahan was Empress consort of the Mughal Empire from 25 May, 1611 to 28 October, 1627 as the wife of the Mughal emperor Jahangir. She was the only Mughal empress to have coinage struck in her name.

**32.** (2) Actual resources are those resources whose total quantity is known. They are being used at the present time. Available technology is used to use these resources. Rich deposits of coal in Rubr region of Germany is an example of actual resources.

**33.** (2) The main mineral constituents of the continental mass are silica and alumina. It is thus called sial (si-silica and al-alumina). The oceanic crust mainly consists of silica and magnesium; it is therefore called sima (si-silica and ma-magnesium).

**34.** (2) Solanaceae family is commonly called 'Potato family'. It is a large family well distributed in tropics and sub-tropics, though a few members are found in temperate zone. Solanum nigrum; Petunia and Datura are placed in this family.

**35.** (1) The Chlorophyceae are a large and important group of freshwater green algae. They are usually green due to the dominance of pigments chlorophyll a and chlorophyllb. Most of the members have one or more storage bodies called pyrenoids located in the chloroplast.

**36.** (1) A coelom is a cavity lined by an epithelium derived from mesoderm. Organs formed inside a coelomcan freely move, grow, and develop independently of the body wall while fluid cushions and protects them from shocks.

**37.** (2) A spherical mirror is a mirror which has the shape of a piece cut out of a spherical surface. There are two types of spherical mirrors : concave, and convex.

**38.** (1) The frictional force exerted by fluids is also called drag. Fluid Friction is the force that obstructs the flow of fluid. It is a situation where the fluid provides resistance between the two surfaces.

**39.** (3) An image organizer or image management application is application software focused on organising digital images. Image organizers represent one kind of desktop organizer software applications. An image organizer has the ability to edit the image tags and often also an easy way to upload files to on-line hosting pages.

**40.** (2) Physical changes are the changes that change the physical traits of the substance, without making any change in their internal structure. On the other hand, a chemical change is one that affects the internal structure of the substance, so as to form a new substance.

**41.** (2) Malleability is a physical property of metals that defines the ability to be hammered, pressed, or rolled into thin sheets without breaking. Examples of malleable metals are gold, iron, aluminum, copper, silver, and lead. Gold and silver are highly malleable.

**42.** (3) Migration is the movement of individuals of a species from one place to another. Emigration is migration seen as the exit of individuals from one region (to another where they will settle permanently or temporarily). Immigration is migration seen as the settling in one region (permanently or temporarily) of individuals coming from another region.

**43.** (4) An Optional Travel Insurance Scheme on a pilot basis for one year has been launched w.e.f 01.09.2016 for the Railway passengers who book e-ticket through official website of Indian Railway Catering & Tourism Corporation (IRCTC). It provide financial support to the family/legal heir in case of death/injury of reserved passengers due to train accident/ untoward incidents as defined under section 123 read with Sections 124 and 124A of the Railways Act, 1989.

**44.** (2) Among his many creations were the lightning rod, glass harmonica (a glass instrument, not to be confused with the metal harmonica), Franklin stove, bifocal glasses and the flexible urinary catheter. In 1752, he tied a key to a kite string and took it outside during a thunderstorm. His goal was to prove that lightning was a form of electricity.

**45.** (4) The 2018 Men's Hockey World Cup will be the 14th edition of the Hockey World Cup field hockey tournament. It is scheduled to be held from 28 November to 16 December, 2018, at the Kalinga Stadium in Bhubaneswar, India.

**46.** (3) Humayun's tomb is the tomb of the Mughal Emperor Humayun in Delhi. The tomb was commissioned by Humayun's wife and chief consort, Empress Bega Begum in 1569-70, and designed by Mirak Mirza Ghiyas, a Persian architect chosen by her.

**47.** (1) The Padma Awards are one of the highest civilian honours of India announced annually on the eve of Republic Day. The Awards are given in three categories : Padma Vibhushan (for exceptional and distinguished service), Padma Bhushan (distinguished service of higher order) and Padma Shri (distinguished service). The award seeks to recognize achievements in all fields of activities or disciplines where an element of public service is involved.

**48.** (2) A Head Full of Ghosts is a horror novel by American writer Paul Tremblay.

- The Cartel is a novel by Don Winslow
- Dodgers is a novel by Bill Beverly

**49.** (1) Emma Morano, at 117 the world's oldest person and also believed to have been the last surviving person born in the 1800s, has died at her home in northern Italy.

**50.** (3) Bangladesh and India share a 4,096-kilometer (long international border, the fifth-longest land border in the world. West Bengal with 2,217 km share longest border with Bangladesh. Other states include 262 km in Assam, 856 km in Tripura, 180 km in Mizoram, 443 km in Meghalaya and 2,217 km in West Bengal.

**51.** (4) On dividing 210 by 11, remainder = 1 and 210 –1 = 209 which is divisible by 11.

So, required least number = 1

**52.** (1) C's one day's work

$$= \frac{4}{25} - \frac{1}{25} - \frac{1}{10}$$

$$= \frac{8-2-5}{50} = \frac{1}{50}$$

$\therefore$ C, alone can do the work in 50 days.

**53.** (2) A regular hexagon has 6 equal equilateral triangles.

Area of regular hexagon

$$= 6 \times \frac{\sqrt{3}}{4} a^2$$

$$= 6 \times \frac{\sqrt{3}}{4} \times (6)^2$$

$$= 54\sqrt{3} \text{ sq. cm.}$$

**54.** (3) Effective discount

$$= \frac{1}{3+1} \times 100$$

$$= \frac{1}{4} \times 100 = 25\%$$

**55.** (2) Let the present ages of R and S be $6x$ and $7x$ years respectively.

According to the question,

12 years ago,

$$\Rightarrow \frac{6x-12}{7x-12} = \frac{9}{11}$$

$$\Rightarrow 66x - 132 = 63x - 108$$

$$\Rightarrow 3x = 132 - 108$$

$$\Rightarrow 3x = 24$$

$$\Rightarrow x = \frac{24}{3} = 8$$

$\therefore$ Present age of R

$= 6x = 6 \times 8 = 48$ years

**56.** (4) Total marks of 10 students

$= 25 \times 10 = 250$

$\therefore$ Correct average

$$= \frac{250+43-34}{10}$$

$$= \frac{259}{10} = 25.9$$

**57.** (2) Cost price of Jacket for Wholesaler

$$= \text{Rs.} \left(2400 \times \frac{100}{100+25} \times \frac{100}{100+20}\right)$$

$$= \text{Rs.} \left(2400 \times \frac{100}{125} \times \frac{100}{120}\right)$$

= Rs. 1600

**58.** (3) Let the number be $x$.

According to the question,

$x + 24 = 104\%$ of $x$

$$\Rightarrow x + 24 = \frac{104x}{100}$$

$$\Rightarrow \frac{104x}{100} - x = 24$$

$$\Rightarrow \frac{104x - 100}{100} = 24$$

$$\Rightarrow \frac{104x}{100} = 24$$

$\Rightarrow x = \frac{2400}{4} = 600$

**59.** (3) Average speed of boat

$= \left(\frac{2xy}{x+y}\right)$ kmph.

$= \left(\frac{2\times30\times20}{30+20}\right)$ kmph.

$= \left(\frac{2\times30\times20}{50}\right)$ kmph.

= 24 km/h.

**60.** (1) Principal $= \frac{\text{S.I.}\times100}{\text{Time}\times\text{Rate}}$

$= \frac{1200\times100}{4\times7.5}$ = Rs. 4000

**61.** (3) $-3\left[1-\frac{x}{2}\right] + \frac{5x}{3} = \frac{1}{6}$

$\Rightarrow -3 + \frac{3x}{2} + \frac{5x}{3} = \frac{1}{6}$

$\Rightarrow \frac{3x}{2}+\frac{5x}{3} = 3 + \frac{1}{6} = \frac{18+1}{6}$

$\Rightarrow \frac{9x+10x}{6} = \frac{19}{6} \Rightarrow 19x = 19$

$\Rightarrow x = \frac{19}{19} = 1$

**62.** (2) $a + b = 3$ and $ab = -4$

$\therefore a^2 + b^2 = (a+b)^2 - 2ab$

$= (3)^2 - 2(-4)$

$= 9 + 8 = 17$

$\therefore a^3 + b^3 = (a+b)(a^2 + b^2 - ab)$

$= (3)(17 - (-4)) = 3 \times 21 = 63$

**63.** (3) Let the number be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$\Rightarrow x + \frac{9}{x} = 10 \Rightarrow x^2 + 9 = 10x$

$\Rightarrow x^2 - 10x + 9 = 0$

$\Rightarrow x^2 - x - 9x + 9 = 0$

$\Rightarrow x(x-1)(x-1) = 0$

$\Rightarrow (x-1)(x-9) = 0$

$\Rightarrow x = 1$ or, $x = 9$

**64.** (4) Let first term of A.P. be $a$ and common difference be $d$.

$a = -10$

$\therefore a + 2d = -4$

$\Rightarrow -10 + 2d = -4$

$\Rightarrow 2d = -4 + 10 = 6$

$\Rightarrow d = \frac{6}{2} = 3$

$\therefore$ 12th term $= a + 11d$

$= -10 + 11 \times 3 = -10 + 33 = 23$

**65.** (2) $y$–axis i.e., at $x = 0$, reflection of point (2, –3.5) :

$\frac{h-2}{1} = \frac{-2(2+0)}{1}$

$\Rightarrow h - 2 = -4$

$= h = -4 + 2 = -2$

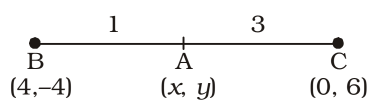
Reflection = (–2, –3.5)

OR

Point (2, –3.5) lies in fourth quadrant.

Its reflection on $y$–axis will be in third quadrant i.e., (–2, –3.5).

**66.** (3)




$x = \frac{1\times0+3\times4}{1+3} = \frac{12}{4} = 3$

$y = \frac{1\times6+3(-4)}{1+3} = \frac{6-12}{4}$

$= \frac{-6}{4} = -1.5$

$\therefore (x, y) = (3, -1.5)$

**67.** (2) Slope of line passing through (–2, –1) and (4,–3)

$= \frac{y_2-y_1}{x_2-x_1} = \frac{-3-(-1)}{4-(-2)}$

$= \frac{3+1}{4+2} = \frac{-2}{6} = \frac{-1}{3}$

Slope of line parallel to this line

$= \frac{-1}{3}$ $[\because m_1 = m_2]$

**68.** (4) $\Delta XYZ \sim \Delta PQR$

$\frac{\text{Perimeter of }\Delta XYZ}{\text{Perimeter of }\Delta PQR} = \frac{XY}{PQ}$

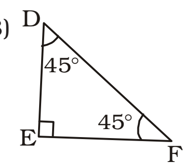
$\Rightarrow \frac{3}{2} = \frac{XY}{6}$

$\Rightarrow XY = \frac{6\times3}{2} = 9$ cm.

**69.** (1) sec45° + tan 30°

$= \sqrt{2} + \frac{1}{\sqrt{3}} = \frac{\sqrt{6}+1}{\sqrt{3}}$

**70.** (3)




cosec F = cosec 45° $= \sqrt{2}$

**71.** (4) $\cos\theta = \frac{5}{13}$

$\therefore \sin\theta = \sqrt{1-\cos^2\theta}$

$= \sqrt{1-\left(\frac{5}{13}\right)^2} = \sqrt{1-\frac{25}{169}}$

$= \sqrt{\frac{169-25}{169}} = \sqrt{\frac{144}{169}} = \frac{12}{13}$

$\therefore \text{cosec}\theta = \frac{13}{12}$

**72.** (1) Difference between number of employees of company D and company A

= 200 –100 = 100

**73.** (1) Total number of employees of company B, D and F.

= 250 + 100 + 400 = 750

So, Insurance agent will sell 750 policies.

**74.** (2) Number of employees in company B = 250

Number of employees in company E = 50

Required per cent

$= \frac{250-50}{250} \times 100$

$= \frac{200 \times 100}{250} = 80\%$

**75.** (2) Number of employees in the sold department of company B = 20% of 250

$= \frac{250 \times 20}{100} = 50$

$\therefore$ Number of employees in company F, now

= 400 + 50 = 450

**76.** (2) Here, the error lies in the wrong use of preposition.

**Between (Preposition)** = used when there are two persons/ things.

**Among (Preposition)** = used when there are more than two persons/things.

Hence, money among themselves..... should be used.

**77.** (3) **Off the hook (idiomatic expression)** → no longer in difficulty or trouble.

**Look at the sentence :**

I lied to get him off the hook.

use 'off' in place of 'of'.

So, correct expression → getting me off the hook.

**78.** (3) **Haul (Verb)** = drag; pull; heave.

**Erect/establish (Verb)** = build; construct.

**Rivet (Verb)** = join/fasten; fix.

**79.** (2) **Feat (Noun)** = achievement; attainment; exploit.

**Treat (Noun)** = party; excuersion.

**Fleet (Noun)** = a group of ships.

**Beat (Noun)** = a main accent or rhythmic unit in music.

**80.** (4) **Whine/gripe (Noun)** = a minor complaint; a complaining tone of voice.

**Look at the sentence :**

There was a hint of a whine in her voice.

**Gratification (Noun)** = satisfaction.

**Luxury (Noun)** = comfort.

**Thrill (Noun)** = excitement.

**81.** (4) **Requisite/precondition (Noun)** = requirement; necessity.

**Look at the sentence :**

She believed privacy to be a requisite for a peaceful life.

**Peripheral (Adjective)** = outermost; surrounding.

**Deadwood (Noun)** = people or things that are no longer useful.

**Trivial (Adjective)** = of little value/importance.

**82.** (1) **Dominate/dictate/command (Verb)** = control; be in control of.

**Look at the sentence :**

The company dominates the market for operating system software.

**Surrender (Verb)** = yield; give in.

**Look at the sentence :**

Over 140 rebels surrendered to the authorities.

**Prevail (Verb)** = exist; be present; be rampant.

**83.** (3) **Dissipate/squander/expend (Verb)** = waste; misspend; misuse; lose; fritter away.

**Look at the sentence :**

A lot of money has been squandered on administering the tax.

**Hoard (Verb)** = store; put aside.

**Look at the sentence :**

He who hoards takes pains.

**Frivol (Verb)** = behave in a frivolous way.

**84.** (3) **To be sold cheaply**

**Look at the sentence :**

They let so many things at their yard sale go for a song.

**85.** (1) **cause someone or oneself to look foolish or stupid.**

**Look at the sentence :**

They made an ass (or/a monkey) out of me by giving me the wrong instructions.

**86.** (3) Here, inviting ($V_1$ + ing) is apt and appropriate.

It is present participle form (invite + ing). It is used as a verb/ an adjective.

**87.** (2) **Must have been** = must have + past participle ($V_3$)

The structure 'must have been' is used for saying what one thinks was essential.

**Look at the sentence :**

It must have been quite an exciting time to be alive (= it was not exciting time though that was absolute necessary).

**88.** (1) **Smooth (Adjective)** = even; flat.

**Cinch (Noun)** = an extremely easy task.

**Facile (Adjective)** = superficial; simplistic.

**89.** (2) **Palpable (Adjective)** = perceptible; visible.

**Substantial (Adjective)** = considerable; real; solid.

**Corporal (Noun)** = a petty officer.

**90.** (2) **undulate** (= surge, swing; wave)

**91.** (3) **revellers** (= partygoers; pleasure seekers)

**94.** (1) A video tutorial is required to be watched by the class every day.

It is active vice of a sentence which contains to-infinitive *i.e.* to + $V_1$.

Here, 'to watch' is given.

Its passive formation will be 'to be watched'.

So, passive formation is as follows :

Subject + is/am/are + $V_3$ + to + be + $V_3$ + by + object.

**95.** (4) My father said that prices were shooting up alarmingly.

It is direct speech of an assertive sentence.

Its indirect speech is formed as follows :

⇒ 'Said' remains as it is because it is not followed by any object.

⇒ Present Continuous changes to Past Continuous

⇒ Connector 'that' is used.

□□□

SET 40

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

Held on : 22.08.2017 (Shift-III)

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :

Screw : Screw driver :: Nail : ?

(1) Nail driver (2) Polish
(3) Steel (4) Hammer

**2.** Select the related letters from the given alternatives :

ACE : YAC :: BDF : ?

(1) PRS (2) XYA
(3) ZBD (4) FDB

**3.** Select the related number from the given alternatives :

10 : 1000 :: 2 : ?

(1) 4 (2) 0.5
(3) 20 (4) 8

**4.** Select the odd word from the given alternatives :

(1) Batsman
(2) Umpire
(3) Bowler
(4) Wicket-keeper

**5.** Select the odd letters from the given alternatives :

(1) CEG (2) IKM
(3) ORU (4) VXZ

**6.** Select the odd number from the given alternatives :

(1) 42 (2) 84
(3) 91 (4) 71

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.

nature, ensure, tense, spent, spurn, ?

(1) pushup (2) thrash
(3) upturn (4) asset

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

R, M, I, F, D, ?

(1) B (2) C
(3) A (4) E

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.

–0.5, –0.35, –0.2, –0.05, ? , 0.25

(1) –0.1 (2) 0.1
(3) 0.15 (4) –0.15

**10.** Aayush's birthday is on Monday 22nd May. On what day of the week will be Neerav's birthday in the same year if Neerav was born on 30th October?

(1) Monday
(2) Wednesday
(3) Friday
(4) Thursday

**11.** The weights of 4 boxes are 90, 30, 20 and 50 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?

(1) 190 (2) 170
(3) 100 (4) 150

**12.** From the given words, select the word which cannot be formed using the letters of the given word.

**INFERNAL**

(1) ALIEN (2) FINAL
(3) LEARN (4) URINE

**13.** If FLOTSAM is coded as UOLGHZN, then how will PIN be coded as?

(1) KRM (2) GEH
(3) OBI (4) DVW

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?

234 × 9 – 12 + 4 = ?

(1) 74 (2) 48
(3) 94 (4) 82

**15.** If 23$35 = 13, 3$5 = 8 then what is the value of 4$13 = ?

(1) 8 (2) 14
(3) 6 (4) 49

**16.** Select the missing number from the given responses :

| 16 | 17 | 28 |
|---|---|---|
| 21 | 23 | 27 |
| ? | 391 | 756 |

(1) 377 (2) 351
(3) 336 (4) 306

**17.** A migrating bird flies 40 km North, then turns East and flies 50 km, then turns North and flies 110 km, and turns to its left and flies 50 km. Where is it now with reference to its starting position?

(1) 150 km South
(2) 150 km North
(3) 70 km North
(4) 70 km South

**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.

**Statements :**

I. All clouds are fogs.
II. All fogs are white.

**Conclusions :**

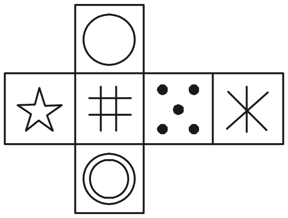
I. Some white are clouds.
II. Some fogs are clouds.

(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

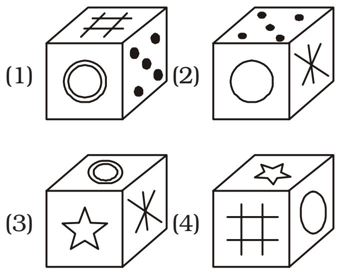
**19.** Which of the following cube in the answer figure cannot be made based on the unfolded

cube in the question figure ?

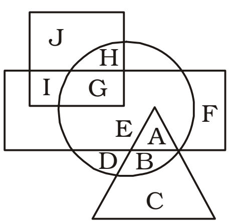
**Question Figure :**



**Answer Figures :**



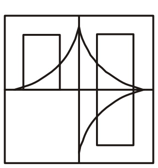
**20.** In the following figure, square represents Priests, triangle represents Singers, circle represents Therapists and rectangle represents Indians. Which set of letters represents Indians who are not Priests ?



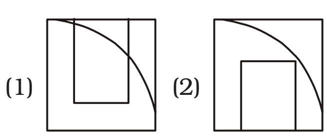

(1) E, F (2) I, G
(3) E, A, F (4) G, E, A

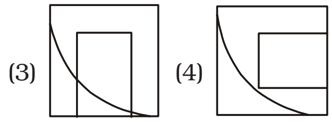
**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure :**



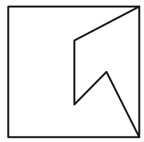
**Answer Figures :**



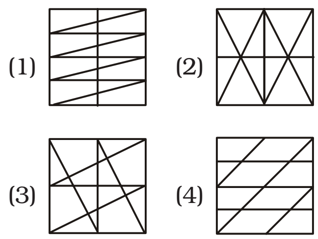


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

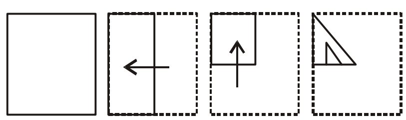


**Answer Figures :**

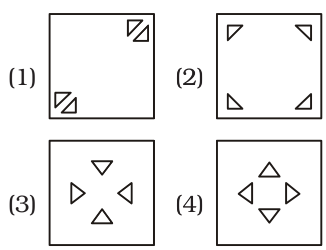


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures :**

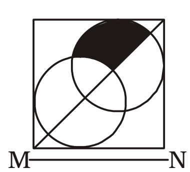


**Answer Figures :**

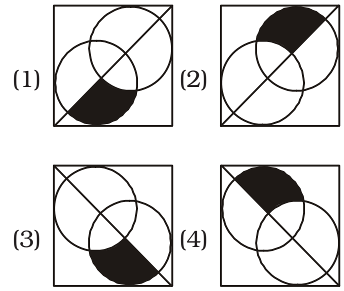


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix–I are numbered from 0 to 4 and that of Matrix–II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 34, 41 etc and 'Z' can be represented by 57, 66 etc. Similarly, you have to identify the set for the word **'OPAL'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | K | B | M | M | I |
| 1 | J | B | C | L | G |
| 2 | A | L | F | L | E |
| 3 | H | J | D | E | K |
| 4 | J | K | E | G | M |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | Q | O | Z | V | P |
| 6 | U | Z | X | X | R |
| 7 | R | P | Z | Z | P |
| 8 | U | O | Z | Z | P |
| 9 | W | U | X | S | R |

(1) 34, 33, 55, 59
(2) 14, 44, 69, 66
(3) 56, 76, 20, 21
(4) 01, 40, 76, 89

## GENERAL AWARENESS

**26.** The ________ balance is equal to capital flows from the rest of the world, minus capital flows to the rest of the world.
(1) Current Account
(2) Savings Account
(3) Capital Account
(4) Asset Account

**27.** If a consumer's demand for a good moves in the same direction as the consumer's income, the consumer's demand for that good must be inversely related to the price of the good is called _______.
(1) Law of demand
(2) Law of supply
(3) Law of substitution
(4) Law of optimal choice

**28.** "Taxes on agricultural income" is listed in the _________ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** ____ approves constitutional amendments.
(1) Rajya Sabha
(2) Ministry of Defence
(3) Prime Minister's Office
(4) Securities and Exchange Board of India

**30.** After the defeat at Plassey, Sirajuddaullah was assassinated and ___ was made the nawab.
(1) Mir Jafar
(2) Mir Qasim
(3) Haider Ali
(4) Tipu Sultan

**31.** Sher Shah Sur defeated which Mughal emperor?
(1) Humayun
(2) Timur Lang
(3) Nadir Shah
(4) Ahmed Shah Abdali

**32.** As the river approaches the sea, the speed of the flowing water decreases and the river begins to break up into a number of streams called ___.
(1) Plateau
(2) Isthmus
(3) Peninsula
(4) Distributaries

**33.** The method of soil conservation in which rocks are piled up to slow down the flow of water which prevents gullies and further soil loss is called?
(1) Mulching
(2) Contour barriers
(3) Rock dam
(4) Terrace farming

**34.** In females, the uterus is ____.
(1) Single (2) Double
(3) Triple (4) Four

**35.** Which of the following is not correct?
(1) Members of Chlorophyceae are commonly called green algae
(2) Members of Phaeophyceae are commonly called red algae
(3) Members of Rhodophyceae are commonly called red algae
(4) Members of Phaeophyceae are commonly called brown algae

**36.** Adamsia (Sea anemone), Pennatula (Sea-pen) are examples of which Phylum?
(1) Coelenterata
(2) Aschelminthes
(3) Annelida
(4) Arthropoda

**37.** If the force applied on the object is in the direction of its motion, the speed of the object _______.
(1) increases
(2) stops
(3) decreases
(4) no effect

**38.** The shape of the outer part of the ear is like a _________.
(1) funnel (2) plate
(3) drum (4) disc

**39.** In Microsoft Excel, the _____ function is used to count the number of cells that contain numbers within the list of arguments.
(1) COUNTIF
(2) COUNT
(3) SUMCOUNT
(4) COUNTSUM

**40.** Fabric made from ______ does not get wrinkled easily.
(1) Cotton (2) Flax
(3) Silk
(4) Polyester

**41.** What is formed when Carbon Dioxide is passed through Lime Water?
(1) Copper Sulphate
(2) Calcium Carbonate
(3) Magnesium Oxide
(4) Baking Soda

**42.** The salt concentration (measured as salinity in parts per thousand), is greater than ____ % in hypersaline lagoons.
(1) 50 (2) 100
(3) 150 (4) 200

**43.** ______ scheme launched by the Central Government aims to cover all those children by 2020 who are either unvaccinated, or are partially vaccinated against seven vaccine preventable diseases.
(1) Deen Dayal Upadhyaya Grameen Kaushalya Yojana
(2) Deendayal Upadhyaya Gram Jyoti Yojana
(3) Mahatma Gandhi Pravasi Suraksha Yojana
(4) Indradhanush Scheme

**44.** Who discovered Penicillin?
(1) Edward Jenner
(2) Niels Bohr
(3) Sir Alexander Fleming
(4) Heinrich Hertz

**45.** Who has won the most number of Gold Medals in Olympics?
(1) Usain Bolt
(2) Katie Ledecky
(3) Michael Phelps
(4) Chen Long

**46.** Gol Gumbaz was built in which century?
(1) 15th (2) 16th
(3) 17th (4) 18th

**47.** Which of the following was the winner of the Grammy Awards 2016 "Album of the Year"?
(1) Sound & Color
(2) 2050

(3) 1989
(4) Beauty Behind the Madness

**48.** Which of the statements given below are correct?
1. The author of the novel 'Atonement' is Ian McEwan.
2. The author of the novel 'The Sound and the Fury' is L. Ron Hubbard.
3. The author of the novel 'White Teeth' is Zadie Smith.

(1) 1 and 2 (2) 2 and 3
(3) 1 an d 3 (4) 1, 2 and 3

**49.** Sodimejo, the world's 'oldest man' died at the age of 146. Which country was he from?
(1) India (2) Pakistan
(3) Indonesia (4) Croatia

**50.** Who is the present Secretary General of SAARC?
(1) Tajuddin Ahmed
(2) Mujibur Rehman
(3) Muhammad Mansur Ali
(4) Mr. Amjad Hussain B. Sial

## QUANTITATIVE APTITUDE

**51.** What is the LCM of 120 and 450?
(1) 2400 (2) 1800
(3) 3600 (4) 4800

**52.** A, B and C can do a job working alone in 6, 9 and 18 days respectively. They all work together for 1 day, then A and B quit. How many days C working alone will take to complete the remainder of the job?
(1) 9 (2) 6
(3) 12 (4) 10

**53.** What is the diameter (in cm.) of a sphere of surface area 6.16 sq. cm?
(1) 1.4 (2) 0.7
(3) 2.8 (4) 2.1

**54.** The discounts offered on a Shirt of Rs. 500 and a pair of Trousers of Rs. 1000 are 20% and 40% respectively. If Ajay bought 2 Shirts and 3 pairs of Trousers what was the effective discount (in %) he received?
(1) 30 (2) 32
(3) 25 (4) 35

**55.** If A's wealth is $\frac{4}{9}$ times of B's and C's is $\frac{7}{6}$ times of B's, what is the ratio of C's wealth to A's?
(1) 8 : 21 (2) 21 : 8
(3) 27 : 14 (4) 14 : 27

**56.** The average of four consecutive odd numbers is 40. What is the largest number?
(1) 42 (2) 45
(3) 43 (4) 44

**57.** If a wholesaler sells a tin of coffee at Rs. 528 he bears a loss of 12%. Now if he decides to sell it at Rs. 636, what will be the profit (in %)?
(1) 7 (2) 5
(3) 6 (4) 4

**58.** A man wills 40% of his wealth to his wife and rest to his children. What per cent of the wealth willed to the wife do the children get?
(1) 150 (2) 66.6
(3) 50 (4) 20

**59.** If a person walks at 12 km/hr instead of 10 km/hr, he would have walked 1 km more in the same time. What is the actual distance (in kms) travelled by him at 10 km/hr in the same time?
(1) 8 (2) 10
(3) 5 (4) 12

**60.** Albert invested an amount of $x$ rupees in a fixed deposit scheme offering 10% per annum for 1st year and 15% per annum for 2nd year and received an amount of Rs. 20,240 after two years. What is $x$ (in Rs.)?
(1) 15000 (2) 16000
(3) 14000 (4) 18000

**61.** If $\frac{10x}{3} + \frac{5}{2}\left(2 - \frac{x}{3}\right) = \frac{7}{2}$, then the value of $x$ is
(1) $\frac{3}{5}$ (2) $\frac{-5}{3}$
(3) $\frac{5}{3}$ (4) $\frac{-3}{5}$

**62.** If $a - b = 2$ and $ab = 15$, then what is the value of $a^3 - b^3$?
(1) 152 (2) 112
(3) 108 (4) 98

**63.** The sum of a fraction and 4 times its reciprocal is $\frac{13}{3}$. What is the fraction?
(1) $\frac{4}{3}$ (2) $\frac{3}{4}$
(3) $\frac{5}{4}$ (4) $\frac{4}{5}$

**64.** The 3rd and 8th term of an arithmetic progression are –14 and 1 respectively. What is the 11th term?
(1) 14 (2) 16
(3) 20 (4) 10

**65.** What is the reflection of the point (5, 3) in the line $y = -2$?
(1) (–9, 3) (2) (–5, –7)
(3) (–9, –3) (4) (5, –7)

**66.** The distance between the points (4, 8) and ($k$, – 4) is 13. What is the value of $k$ ?
(1) 1 (2) 3
(3) –1 (4) –3

**67.** What is the equation of the line perpendicular to the line $2x + 3y = -6$ and having $y$-intercept 3 ?
(1) $3x - 2y = 6$
(2) $3x - 2y = -6$
(3) $2x - 3y = -6$
(4) $2x - 3y = 6$

**68.** D and E are points on sides AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 2 : 3 and area of ΔADE is 4 sq. cm, what is the area (in sq. cm) of quadrilateral BDEC.
(1) 25 (2) 21
(3) 5 (4) 9

**69.** What is the value of sin 30° – cosec 45°?
(1) $\left(\frac{2\sqrt{6}-1}{\sqrt{3}}\right)$
(2) $\left(\frac{1-2\sqrt{3}}{2}\right)$

(3) $\left(\frac{\sqrt{2}-\sqrt{3}}{\sqrt{6}}\right)$

(4) $\left(\frac{1-2\sqrt{2}}{2}\right)$

**70.** $\Delta$LMN is right angled at M. If M $\angle$N = 45°, what is the length of MN (in cm), if NL = $9\sqrt{2}$ cm?

(1) $9\sqrt{2}$ (2) $\frac{9}{\sqrt{2}}$

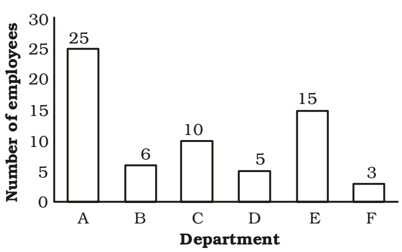
(3) 18 (4) 9

**71.** If cos θ = $\frac{35}{37}$, then what is the value of cot θ?

(1) $\frac{12}{35}$ (2) $\frac{35}{12}$

(3) $\frac{37}{12}$ (4) $\frac{12}{37}$

**Directions (72–75) :** The bar graph shows the number of employees working under the six different Departments (A, B, C, D, E, F) of a certain company. Study the diagram and answer the following questions.




**72.** Which Department has the second highest number of employees?

(1) E (2) A

(3) D (4) F

**73.** If 5 employees are transferred from department A to department F, then number of employees in department F would be between those of which two departments?

(1) B and C (2) A and E

(3) B and D (4) C and E

**74.** If departments F and D are merged to create a new department G, then which department will have the least number of employees?

(1) G (2) F

(3) D (4) B

**75.** If the average salary of these employees is Rs. 8,000, then how much was the company's expense (in Rs. Lakhs) towards salaries?

(1) 4.86 (2) 5.12

(3) 3.24 (4) 5.88

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** Freedom fighters laboured (1)/ to the good of (2)/the poor enslaved masses.(3)/No Error (4)

**77.** Father was upset (1)/when he found that (2)/you are not there.(3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** To ensure a _____ reply, please include all pertinent details in your email.

(1) prompt (2) efficient

(3) tardy (4) strange

**79.** The survey provided the company with a wide _______ of feedback on its products.

(1) spectrum (2) option

(3) choices (4) colours

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Ravage**

(1) Surrender

(2) Construct

(3) Damage

(4) Liberate

**81. Ravish**

(1) Repulse (2) Enthrall

(3) Offend (4) Depress

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Rebate**

(1) Deduction

(2) Bonus

(3) Increase

(4) Remission

**83. Rebuke**

(1) Admonition

(2) Censure (3) Scold

(4) Flattery

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Achilles' heel**

(1) A fatal weakness in spite of overall strength.

(2) A secret weapon to be used as a last resort.

(3) A past deed which one is trying to hide.

(4) The person who is blamed if anything goes wrong.

**85. Beat around the bush**

(1) To treat a topic, but omit its main points, often intentionally.

(2) Talk bad about a person, often in the absence of that person .

(3) Spend a fun jovial time.

(4) It is wise to ignore hardships and continue with your task.

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "no improvement".

**86.** As long as we are in this historical city let us spend our time **(doing sightseeing).**

(1) to sightsee

(2) sightsee

(3) sightseeing

(4) No improvement

**87.** He proposed **(meets)** me at the temple.
(1) for meeting
(2) to meet
(3) meeting with
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Irritating inconvenience**
(1) Tranquillity
(2) Hassle
(3) Harmony
(4) Rectitude

**89. A punishment imposed for breaking a law, rule, or contract.**
(1) Penalty (2) Reprieve
(3) Grace (4) Amnesty

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) atrocias
(2) atrocious
(3) atroceous
(4) atroacious

**91.** (1) curvacias
(2) curvaceous
(3) curvaceuse
(4) curveaceous

**Directions (92–93) :** Each question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. Now I just have to keep my**
X. place and not let that scrawny
Y. guy with gelled
Z. hair edge in front of me
(1) YZX (2) XYZ
(3) ZXY (4) XZY

**93. The idea of a standard time**
X. lives that we often take it for
Y. zone has become so integral to our
Z. granted and assume it to be a part of natural phenomena
(1) ZYX (2) XYZ
(3) YZX (4) YXZ

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**Varun ate six rotis at dinner.**
(1) At dinner, six rotis was ate by Varun.
(2) At dinner, six rotis were eaten by Varun.
(3) At dinner, Varun had eaten six rotis.
(4) At dinner, had Varun eaten six rotis.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**"What is your name?" she asked him.**
(1) She asked him what his name is.
(2) She asked him what his name has been.
(3) She asked him what is his name.
(4) She asked him what his name was.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Raising effective primary and district-level coverage of mental health services for the general population, without requiring people to travel long distances to see a specialist and get medicines, should be a priority. **(96)** the base of psychiatrists is low in relation to the need, the use of trained general practitioners as the first line of contact assumes importance. Some studies show many of them are not confident **(97)** with their training to detect, diagnose and manage mental illnesses. **(98)** a concerted effort, primary care physicians can be trained to help people with mild and severe problems, **(99)** from anxiety disorders to depression, psychoses and conditions arising from alcohol and substance **(100)**.

**96.** (1) Since
(2) Why
(3) As soon as
(4) Where

**97.** (1) lot (2) enough
(3) very (4) much

**98.** (1) To (2) For
(3) But (4) With

**99.** (1) ranging
(2) coming
(3) distancing
(4) longing

**100.** (1) abuse (2) eating
(3) sale (4) withdrawal

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (3) | **3.** (4) | **4.** (2) |
| **5.** (3) | **6.** (4) | **7.** (3) | **8.** (2) |
| **9.** (2) | **10.** (1) | **11.** (4) | **12.** (4) |
| **13.** (1) | **14.** (1) | **15.** (1) | **16.** (3) |
| **17.** (2) | **18.** (3) | **19.** (2) | **20.** (3) |
| **21.** (1) | **22.** (3) | **23.** (3) | **24.** (3) |
| **25.** (3) | **26.** (3) | **27.** (1) | **28.** (2) |
| **29.** (1) | **30.** (1) | **31.** (1) | **32.** (4) |
| **33.** (3) | **34.** (1) | **35.** (2) | **36.** (1) |
| **37.** (1) | **38.** (1) | **39.** (2) | **40.** (4) |
| **41.** (2) | **42.** (2) | **43.** (4) | **44.** (3) |
| **45.** (3) | **46.** (3) | **47.** (3) | **48.** (3) |
| **49.** (3) | **50.** (4) | **51.** (2) | **52.** (3) |
| **53.** (1) | **54.** (4) | **55.** (2) | **56.** (3) |
| **57.** (3) | **58.** (1) | **59.** (3) | **60.** (2) |
| **61.** (4) | **62.** (4) | **63.** (1) | **64.** (4) |
| **65.** (4) | **66.** (3) | **67.** (2) | **68.** (2) |
| **69.** (4) | **70.** (4) | **71.** (2) | **72.** (1) |
| **73.** (1) | **74.** (4) | **75.** (2) | **76.** (2) |
| **77.** (3) | **78.** (1) | **79.** (1) | **80.** (3) |
| **81.** (2) | **82.** (3) | **83.** (4) | **84.** (1) |
| **85.** (1) | **86.** (3) | **87.** (2) | **88.** (2) |
| **89.** (1) | **90.** (2) | **91.** (2) | **92.** (2) |
| **93.** (4) | **94.** (2) | **95.** (4) | **96.** (1) |
| **97.** (2) | **98.** (4) | **99.** (1) | **100.** (1) |

## EXPLANATIONS

**1.** (4) The second is used to fix the first. Screw driver is used to fix or open screw. Similarly, hammer is used to fix nail.

**2.** (3)

A C E ⟶ Y A C

(A → Y: –2, C → A: –2, E → C: –2)

Similarly,

B D F ⟶ Z B D

(B → Z: –2, D → B: –2, F → D: –2)

**3.** (4) $(10)^3 = 10 \times 10 \times 10$
$= 1000$
Similarly,
$(2)^3 = 2 \times 2 \times 2 = 8$

**4.** (2) Umpire is different from the other three words. Batsman, Bowler and Wicket–keeper are players of cricket while umpire is responsible for the regulation of the game.

**5.** (3) $C \xrightarrow{+2} E \xrightarrow{+2} G$

$I \xrightarrow{+2} K \xrightarrow{+2} M$

$V \xrightarrow{+2} X \xrightarrow{+2} Z$

But, $O \xrightarrow{+3} R \xrightarrow{+3} U$

**6.** (4) 71 is a Prime Number.
$42 = 7 \times 6$
$84 = 7 \times 12$
$91 = 7 \times 13$

**7.** (3) The position of '*n*' shifts one place towards right in the next term :
nature ⇒ First from left
ensure ⇒ Second from left
tense ⇒ Third from left
spent ⇒ Fourth from left
spurn ⇒ Fifth from left
upturn ⇒ Sixth from left

**8.** (2)

$R \xrightarrow{-5} M \xrightarrow{-4} I \xrightarrow{-3} F \xrightarrow{-2} D \xrightarrow{-1}$ **C**

**9.** (2) $-0.5 + 0.15 = -0.35$
$-0.35 + 0.15 = -0.2$
$-0.2 + 0.15 = -0.05$
$-0.05 + 0.15 =$ **0.1**
$0.1 + 0.15 = 0.25$

**10.** (1) Total number of days from 22nd May to 30th October
$= 9 + 30 + 31 + 31 + 30 + 30$
$= 161$ days $= 23$ weeks 0 day
Therefore, 30th October will be Monday.

**11.** (4) Possible weights of boxes :
(i) 90 + 30 = 120 kilograms
(ii) 90 + 20 = 110 kilograms
(iii) 90 + 50 = 140 kilograms
(iv) 30 + 20 = 50 kilograms
(v) 30 + 50 = 80 kilograms
(vi) 20 + 50 = 70 kilograms
(vii) 90 + 30 + 20 = 140 kilograms
(viii) 90 + 30 + 50 = 170 kilograms
(ix) 90 + 20 + 50 = 160 kilograms
(x) 30 + 20 + 50 = 100 kilograms
(xi) 90 + 30 + 20 + 50
= 190 kilograms

**12.** (4) There is no 'U' letter in the given word. Therefore, the word URINE cannot be formed.

[IN] F [E] R N [AL]
⇒ A L I E N

[I] N [F] E R [NAL]
⇒ F I N A L

I N F [ERNAL]
⇒ L E A R N

**13.** (1)

F L O T S A M
↕ ↕ ↕ ↕ ↕ ↕ ↕
U O L G H Z N

Pairs of opposite letters.
Therefore,

P I N
↕ ↕ ↕
K R M

**14.** (1)

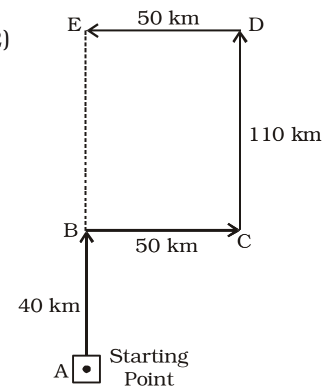
| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

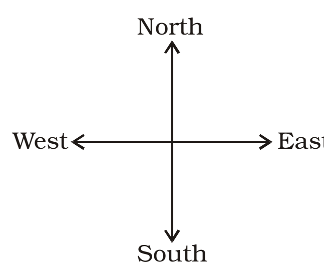
$234 \times 9 - 12 + 4 = ?$
$\Rightarrow ? = 234 \div 9 + 12 \times 4$
$\Rightarrow ? = 26 + 48 =$ **74**

**15.** (1) 23 $ 35 = 13
⇒ 2 + 3 + 3 + 5 = 13
3 $ 5 = 8
⇒ 3 + 5 = 8
Therefore,
4 $ 13 = ?
⇒ ? = 4 + 1 + 3 = **8**

**16.** (3) First Column
$16 \times 21 =$ **336**
Second Column
$17 \times 23 = 391$
Third Column
$28 \times 27 = 756$

**17.** (2)




AE = (40 + 110) km = 150 km.
Point E is in north direction of Point A.

**18.** (3) Both the Premises are Universal Affirmative (A–type).

All clouds are fogs.
↕
All fogs are white.

A + A ⇒ A–type of Conclusion
"All clouds are white."
Conclusion I is the Converse of it.
Conclusion II is the Converse of the first Premise.

**19.** (2) After folding the figure :

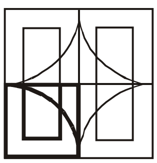
lies opposite .

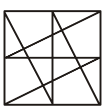
lies opposite .

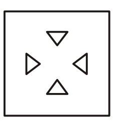
lies opposite .

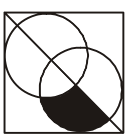
If is on the top and is in front then would be on the left surface.

**20.** (3) Rectangle represents Indians and square represents Priests. Therefore, Indians who are not Priests can be represented by such letters which are present in the rectangle but are outside the square. Such letters are E, A and F.

**21.** (1) 

**22.** (3) 

**23.** (3) 

**24.** (3) 

**25.** (3) O ⇒ 56, 86
P ⇒ 59, 76, 79, 89
A ⇒ 20
L ⇒ 13, 21, 23

| Option | O | P | A | L |
|---|---|---|---|---|
| (1) | ~~34~~ | ~~38~~ | ~~55~~ | ~~59~~ |
| (2) | ~~14~~ | ~~44~~ | ~~69~~ | ~~66~~ |
| (3) | 56 | 76 | 20 | 21 |
| (4) | ~~01~~ | ~~40~~ | ~~76~~ | ~~89~~ |

**26.** (3) The balance of payments records a country's transactions with the rest of the world. The current account balance is equal to the sum of the trade balance, net investment income, and net transfers the country receives from the rest of the world. The capital account balance is equal to capital flows from the rest of the world minus capital flows to the rest of the world.

**27.** (1) The law of demand is a microeconomic law that states, all other factors being equal, as the price of a good or service increases, consumer demand for the good or service will decrease and vice versa.In other words, the law of demand describes an inverse relationship between price and quantity demanded of a good.

**28.** (2) Taxes on agricultural income comes under State List, a list of 61 items in Schedule Seven to the Constitution of India. It is mentioned as Entry 46 in the State List. In the Seventh Schedule, Entry 82 in the Union List mentions taxes other than agricultural income.

**29.** (1) As per the procedure, laid down in Part XX (Article 368) of the Constitution of India, an amendment of the Constitution can be initiated only by the introduction of a Bill in either House of Parliament (Lok Sabha and Rajya Sabha). The Bill must then be passed in each House by a majority of the total membership of that House and by a majority of not less than two-thirds of the members of that House present and voting.

**30.** (1) Siraj ud-Daulah, the Nawab of Bengal, was defeated and killed in the Battle of Plassey by the British due to the betrayal of the commander of Siraj ud-Daulah's army, Mir Jafar. Thus, after helping the British defeat Siraj ud-Daulah, he became the new Nawab of Bengal in 1757 with military support from the British East India Company.

**31.** (1) Sher Shah Suri, the founder of the Sur Empire in North India, defeated Mughal emperor Humayun in the Battle of Chausa in June 1539. He defeated Humayun again in 1540 after which the Mughal emperor became a fugitive. Sher Shah overthrew the government of the Emperor Humayun in 1540, and ruled instead until his death in 1545.

**32.** (4) As the river approaches the sea, the speed of the flowing water decreases, and the river begins to break up into several streams known as distributaries. Then a time comes when the river becomes very slow and it begins to deposit its load. Each distributary forms its own mouth. The collection of sediments from all the mouths forms a delta, which is a triangular landmass.

**33.** (3) The method of soil conservation in which rocks are piled up to slow down the flow of water which prevents gullies and further soil loss is called rock dam. It aims to reduce erosion in a drainage channel by restricting the velocity of flow in the channel.

**34.** (1) Females have single uterus. Also known as womb, it is a major female hormone-responsive reproductive sex organ of humans and most other mammals. It is within the uterus that the fetus develops during gestation.

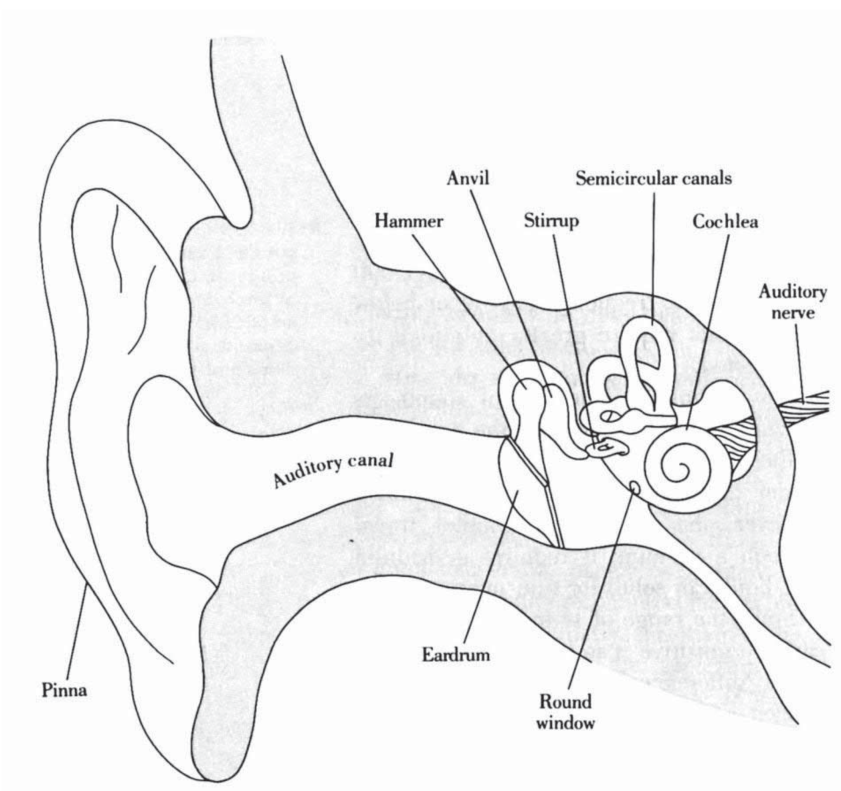
**35.** (2) Phaeophyceae is a large group of algae consisting of 240 genera and over 1,500 species out of which 32 genera and 93 species are reported from India. They are commonly known as brown algae, due to the presence of a golden-brown xanthophyll pigment, fucoxanthin ($C_{40}H_{54}O_6$) in the chromatophores.

**36.** (1) Adamsia (Sea anemone), Pennatula (Sea-pen) are examples of Anthozoa Class under Coelenterata Phylum. The organism under this phylum are

mostly marine, solitary or colonial, sessile, or free-swimming and radially symmetrical animals. Other examples of Anthozoa class are Meandrina (brain-coral), Fungia, Gorgonia (sea fan or horny coral), etc.

**37.** (1) Forces affect how objects move. They may cause motion; they may also slow, stop, or change the direction of motion of an object that is already moving. If the force applied on the object is in the direction of its motion, the speed of the object increases. If the force is applied in the direction opposite to the direction of motion, then it results in a decrease in the speed of the object.

**38.** (1) The outer ear is shaped like a funnel, which helps it collect sound. Sound is initially collected by the outer ear, also called the auricle or pinna. This is the visible, fleshy part of the ear. Sound enters the outer ear and travels down the auditory canal to the eardrum.




**39.** (2) In Microsoft Excel, the COUNT function counts the number of cells that contain numbers, and counts numbers within the list of arguments. It is used to get the number of entries in a number field that is in a range or array of numbers. For example, we can enter the following formula to count the numbers in the range A1 : A20 : = COUNT(A1 : A20).

**40.** (4) The two primary causes of wrinkling in fabrics are water moisture and heat. Cotton, rayon, and linen are fabrics that are highly moisture absorbent therefore, wrinkle easily. Synthetics like polyester, nylon, acrylic and olefin, have greater stability since they do not absorb water as efficiently and thus, are wrinkle free.

**41.** (2) When Carbon dioxide is passed into limewater, it gives a milky or turbid solution. This is due to the insoluble suspension of calcium carbonate formed: $Ca(OH)_2(aq) + CO_2(g)$ ? $CaCO_3(s) + H_2O(l)$. However, when excess of carbon dioxide is passed through the solution, the turbidity disappears, and a clear solution is obtained due to the formation of calcium bicarbonate, which is soluble in water.

**42.** (2) The salt concentration which is measured as salinity in parts per thousand, is less than 5% in freshwater, 30-35% in the sea (marine water) and greater than 100% in some hypersaline lagoons. Salinity is the measure of the number of grams of salts per kilogram of seawater, which is expressed in parts per thousand.

**43.** (4) Mission Indradhanush aims to cover all those children by 2020 who are either unvaccinated or are partially vaccinated against seven vaccine preventable diseases which include diphtheria, whooping cough, tetanus, polio, tuberculosis, measles and hepatitis B. It was launched by Union Health Minister J. P. Nadda on 25 December, 2014.

**44.** (3) Sir Alexander Fleming discovered the world's first antibiotic—benzylpenicillin (Penicillin G)—from the mould Penicillium notatum in 1928. For this discovery, he shared the Nobel Prize in Physiology or Medicine in 1945 with Howard Florey and Ernst Boris Chain.

**45.** (3) As of today, American swimmer Michael Phelps had won the most Olympic medals with 28 medals (23 gold, 3 silver, 2 bronze). He is also the most decorated Olympian in individual events, with 16 medals (13 gold, 2 silver, 1 bronze).

**46.** (3) Gol Gumbaz is the mausoleum of Mohammed Adil Shah, Sultan of Bijapur. The tomb, located in Bijapur, Karnataka

in India, was completed in 1656 by the architect Yaqut of Dabul. It is constructed as per the Deccan architecture.

**47.** (3) 1989, the fifth studio album by American singer-songwriter Taylor Swift, won the Best Album of the Year at the 58th Annual Grammy Awards. The album was released on October 27, 2014, through Big Machine Records. The album represents a departure from the country music of Swift's previous albums, and is described by her as the "first documented official pop album."

**48.** (3) The Sound and the Fury is a novel written by the American author William Faulkner. Published in 1929, it is ranked sixth on Modern Library's list of the 100 best English-language novels of the 20th century. The novel is known for employinga number of narrative styles, including stream of consciousness.

**49.** (3) Saparman Sodimejo, known more commonly as Mbah Gotho was an Indonesian man who unverifiablyclaimed to be the oldest person ever recorded. He died at the age of 146 years in his village in the Seragaen district of Central Java on 30 April 2017. He had an identity card which recorded the date of his birth as December 31, 1870.

**50.** (4) Pakistan's diplomat Amjad Hussain B Sial on 1 March, 2017 assumed office as the Secretary General of the South Asian Association for Regional Cooperation (SAARC). Sial succeeded Nepal's Arjun Bahadur Thapa, who was appointed the Secretary-General in 2014.

**51.** (2)

| 2 | 120, 450 |
|---|---|
| 5 | 60, 225 |
| 3 | 12, 45 |
| | 4, 15 |

$\therefore$ Required LCM

$= 2 \times 3 \times 4 \times 5 \times 15 = 1800$

**52.** (3) (A + B + C)'s 1 day's work

$= \frac{1}{6} + \frac{1}{9} + \frac{1}{18} = \frac{3+2+1}{18}$

$= \frac{6}{18} = \frac{1}{3}$

Remaining work $= 1 - \frac{1}{3} = \frac{2}{3}$

$\therefore$ Time taken by C $= \frac{2}{3} \times 18$

= 12 days

**53.** (1) Curved surface area of sphere $= 4\pi r^2$

$\therefore\ 4 \times \frac{22}{7} \times r^2 = 6.16$

$\Rightarrow r^2 = \frac{6.16 \times 7}{4 \times 22} = 0.49$

$\Rightarrow r = \sqrt{0.49} = 0.7$ cm.

$\therefore$ Diameter of sphere

= (2 × 0.7) cm. = 1.4 cm.

**54.** (4) Total discount

$= \text{Rs. } \left(1000 \times \frac{20}{100} + 3000 \times \frac{40}{100}\right)$

= Rs. (200 + 1200) = Rs. 1400

Total marked price

= Rs. (1000 + 3000) = Rs. 4000

$\therefore$ Discount per cent

$= \frac{1400}{4000} \times 100 = 35\%$

**55.** (2) Let the amount with B = Re. 1 (let)

$\therefore$ Amount with A = Re. $\frac{4}{9}$

Amount with C = Rs. $\frac{7}{6}$

$\therefore$ A : B : C $= \frac{4}{9} : 1 : \frac{7}{6}$

$= \left(\frac{4}{9} \times 18\right) : 18 : \left(\frac{7}{6} \times 18\right)$

[$\because$ LCM of 6 and 9 = 18]

= 8 : 18 : 21

$\therefore$ C : A = 21 : 8

**56.** (3) The number of consecutive odd numbers is even.

$\therefore \left(\frac{n}{2} + 1\right)$th number = average + 1.

$\therefore$ Third number = 40 + 1 = 41

$\therefore$ Fourth number = 41 + 2 = 43

**57.** (3) C.P. of the tin of coffee

$= \text{Rs. } \left(\frac{100}{100-12} \times 528\right)$

$= \text{Rs. } \left(\frac{100 \times 528}{88}\right)$

= Rs. 600

When the S.P. is Rs. 636,

Profit per cent

$= \left(\frac{636-600}{600}\right) \times 100 = \frac{36}{6}$

= 6%

**58.** (1) Total amount with the man = Rs. 100 (let)

Amount given to the wife = Rs. 40

Amount given to the children = Rs. 60

$\therefore$ Required per cent

$= \frac{60}{40} \times 100 = 150\%$

**59.** (3) Let the distance covered at 10 kmph be $x$ km.

According to the question,

$\frac{x}{10} = \frac{x+1}{12}$

$\left(\because \text{Time is same. Time} = \frac{\text{Distance}}{\text{Speed}}\right)$

$\Rightarrow \frac{x}{5} = \frac{x+1}{6}$

$\Rightarrow 6x = 5x + 5$

$\Rightarrow x = 5$ km.

**60.** (2) $A = P\left(1 + \frac{R_1}{100}\right)\left(1 + \frac{R_2}{100}\right)$

$\Rightarrow 20240 = x\left(1 + \frac{10}{100}\right)\left(1 + \frac{15}{100}\right)$

$\Rightarrow 20240 = x \times \frac{110}{100} \times \frac{115}{100}$

$\Rightarrow x = \frac{20240 \times 10000}{110 \times 115}$

= Rs. 16000

**61.** (4) $\frac{10x}{3} + \frac{5}{2}\left(2 - \frac{x}{3}\right) = \frac{7}{2}$

$\Rightarrow \frac{10x}{3} + \frac{5}{2} \times 2 - \frac{5x}{6} = \frac{7}{2}$

$\Rightarrow \frac{10x}{3} - \frac{5x}{6} + 5 = \frac{7}{2}$

$\Rightarrow \frac{20x - 5x}{6} = \frac{7}{2} - 5$

$\Rightarrow \frac{15x}{6} = \frac{7-10}{2} = \frac{-3}{2}$

$\Rightarrow x = \frac{-3}{2} \times \frac{6}{15} = \frac{-3}{5}$

**62.** (4) $a^3 - b^3 = (a-b)^3 + 3ab(a-b)$

$= (2)^3 + 3 \times 15 \times 2$

$= 8 + 90 = 98$

**63.** (1) Let the fraction be $x$.

According to the question,

$x + \frac{4}{x} = \frac{13}{3}$

$\Rightarrow \frac{x^2 + 4}{x} = \frac{13}{3}$

$\Rightarrow 3x^2 + 12 = 13x$

$\Rightarrow 3x^2 - 13x + 12 = 0$

$\Rightarrow 3x^2 - 9x - 4x + 12 = 0$

$\Rightarrow 3x(x-3) - 4(x-3) = 0$

$\Rightarrow (x-3)(3x-4) = 0$

$\Rightarrow x = 3$ or, $\frac{4}{3}$

**64.** (4) Let, first term = $a$

Common difference = $d$

Number of terms = $n$

$\therefore$ $n$th term = $a_n = a + (n-1)d$

$\therefore$ $a + 2d = -14$ ... (i)

$a + 7d = 1$ ... (ii)

By equation (ii) – (i),

$5d = 15$

$\Rightarrow d = \frac{15}{5} = 3$

From equation (i),

$a + 2d = -14$

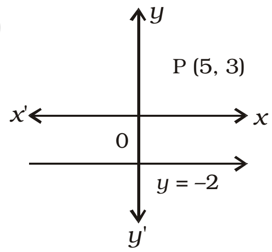
$\Rightarrow a + 6 = -14$

$\Rightarrow a = -20$

$\therefore$ Eleventh term = $a_{11} = a + 10d$

$= -20 + 30 = 10$

**65.** (4)




$y = -2$ represents the equation of a line parallel to $x$–axis.

Point (5, 3) lies in first quadrant.

Its image on x–axis is (5, –3).

Position of point P with respect to $y = -2$ = (5, 5)

$\therefore$ Required position of image = (5, –7) which is with respect to $x$–axis.

**66.** (3) Distance between points $(x_1, y_1)$ and $(x_2, y_2)$

$= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$\therefore$ $(k-4)^2 + (-4-8)^2 = 13^2$

$\Rightarrow k^2 - 8k + 16 + 144 = 169$

$\Rightarrow k^2 - 8k + 160 = 169$

$\Rightarrow k^2 - 8k - 9 = 0$

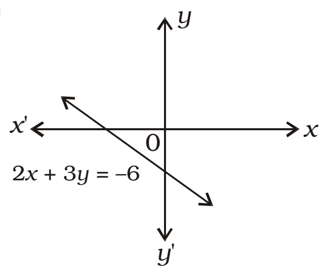
$\Rightarrow k^2 - 9k + k - 9 = 0$

$\Rightarrow k(k-9) + 1(k-9) = 0$

$\Rightarrow (k-9)(k+1) = 0$

$\Rightarrow k = 9$ or, $-1$

**67.** (2)




Slope of line $2x + 3y = -6$ is

$\frac{-\text{coefficient of } x}{\text{coefficient of } y} = \frac{-2}{3}$

$\therefore$ Slope of line perpendicular to it = $\frac{3}{2}$

$(\because m_1 \times m_2 = -1)$

It passes through (0, 3).

$\therefore$ Equation of a line passing through $(x_1, y_1)$ is :

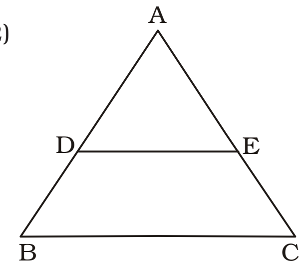
$y - y_1 = m(x - x_1)$

$\Rightarrow y - 3 = \frac{3}{2}(x - 0)$

$\Rightarrow y - 3 = \frac{3x}{2}$

$\Rightarrow 2y - 6 = 3x \Rightarrow 3x - 2y = -6$

**68.** (2)




DE || BC

$\therefore$ $\angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA–similarity,

$\Delta ABC \sim \Delta ADE$

$\therefore \frac{AB}{AD} = \frac{AC}{AE}$

$\therefore \frac{AD}{DB} = \frac{2}{3}$

$\Rightarrow \frac{DB}{AD} = \frac{3}{2}$

$\Rightarrow \frac{DB}{AD} + 1 = \frac{3}{2} + 1$

$\Rightarrow \frac{AB}{AD} = \frac{5}{2}$

$\therefore \frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta ADE}$

$= \frac{AB^2}{AD^2} = \frac{25}{4}$

$\therefore \frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta ADE} - 1$

$= \frac{25}{4} - 1$

$\Rightarrow \frac{\text{Area of } \square BDEC}{\text{Area of } \Delta ADE} = \frac{21}{4}$

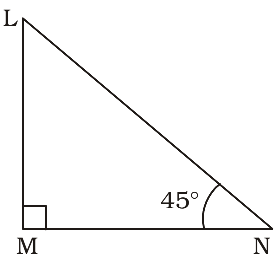
$\therefore$ Area of quadrilateral BDEC

$= \frac{21}{4} \times 4 = 21$ sq. cm.

**69.** (4) sin 30° – cosec 45°

$= \frac{1}{2} - \sqrt{2} = \frac{1-2\sqrt{2}}{2}$

**70.** (4)




$\cos 45° = \frac{MN}{LN}$

$\Rightarrow \frac{1}{\sqrt{2}} = \frac{MN}{9\sqrt{2}}$

$\Rightarrow MN = \frac{9\sqrt{2}}{\sqrt{2}} = 9$ cm.

**71.** (2) $\cos\theta = \frac{35}{37}$

$\therefore \sin\theta = \sqrt{1-\cos^2\theta}$

$= \sqrt{1-\left(\frac{35}{37}\right)^2}$

$= \sqrt{\frac{37^2-35^2}{37^2}}$

$= \sqrt{\frac{(37+35)\,(37-35)}{37^2}}$

$= \sqrt{\frac{72\times 2}{37^2}} = \frac{12}{37}$

$\therefore \cot\theta = \frac{\cos\theta}{\sin\theta} = \frac{\frac{35}{37}}{\frac{12}{37}} = \frac{35}{12}$

**72.** (1) It is obvious from the bar graph.

**73.** (1) New number of employees in department F = 5 + 3 = 8

$\therefore$ 6 < 8 < 10 i.e., in between departments B and C.

**74.** (4) Number of employees in new department G = 8

Number of employees in department B = 6

**75.** (2) Total number of employees = (25 + 6 + 10 + 5 + 15 + 3) = 64

$\therefore$ Total expenses against salaries = Rs. (64 × 8000)

$=$ Rs. $\left(\frac{512000}{100000}\right)$ lacs

= Rs. 5.12 lacs

**76.** (2) **For the good of** = in order to help someone/something.

Hence, **for the good** of should be used here.

**77.** (3) The sentence shows past time. Hence, I was not there/ you were not there ..... should be used here.

**78.** (1) **Prompt (Adjective)** = immediate; quick, instant.

**79.** (1) **Spectrum (Noun)** = a range of different opinions, positions etc., between two extreme positions.

**80.** (3) **Ravage (Verb)** = cause severe and extensive damage to; devastate; ruin.

**Look at the sentence :**

Darkness unleashed, it ravaged the land, destroying everything in its path.

**81.** (2) **Ravish (Verb)** = fill someone with intense delight; enrapture; enchant; enthrall; to give great pleasure.

**Look at the sentence :**

I was utterly ravished by the way she smiled.

**82.** (3) **Rebate (Verb)** = pay back a sum of money as a rebate; diminish; reduce the force of something; lessen.

**Increase (Verb)** = enlarge; make greater.

**Look at the sentences :**

The government rebates part of your own and your employer's National Insurance contributions into the plan.

Incidents of armed robbery have increased over the last few years.

**83.** (4) **Rebuke (Noun)** = reprimand; scolding; admonishment; criticism.

**Flattery (Noun)** = excessive and insincere praise; admiration.

**Look at the sentences :**

He received a stern rebuke from the manager.

He tried to win his teacher's favour with flattery.

**84.** (1) **Achilles' heel** = a weakness or vulnerable point; deficiency; weakness inspite of overall strength.

**Look at the sentence :**

I am trying to lose weight, but ice cream is my Achilles' heel.

The Achilles' heel of the case for nuclear power remains the issue of the disposal of waste.

**85.** (1) **Beat around the bush** = to treat a topic, but its main points, often intentionally; to avoid talking about something difficult or unpleasant.

**Look at the sentence :**

Please stop beating about the bush and tell me what the problem is!

**86.** (3) **sightseeing** = the act of visiting and seeing places and objects of interest.

**Look at the sentence :**

There was no time to go sight seeing in seattle.

**87.** (2) Here, infinitive = to + $V_1$ should be used.

**90.** (2) **Atrocious (Adjective)** = brutal; barbaric; savage.

**Look at the sentence :**

The atrocious acts of terror in New York have shocked the world.

**91.** (2) **Curvaceous (Adjective)** = having an attractively curved shape; shapely; attractive.

**Look at the sentence :**

The F430's styling is curvaceous which is typical of Ferrari.

**94.** (2) Subject + was/were + $V_3$

**95.** (4) What is your name?

$\Rightarrow$ What his name was. (Assertive)

❑❑❑

SET 41

# SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 23.08.2017 (Shift-I)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
River : Stream :: Ocean : ?
(1) Current (2) Pond
(3) Dam (4) Sea

**2.** Select the related letters from the given alternatives :
WUS : DFH :: MKI : ?
(1) LJH (2) GEC
(3) OQS (4) NPR

**3.** Select the related number from the given alternatives :

$-\frac{3}{7} : \frac{7}{3} :: \frac{9}{2} : ?$

(1) $\frac{2}{9}$ (2) $-\frac{9}{2}$

(3) $\frac{7}{2}$ (4) $-\frac{2}{9}$

**4.** Select the odd word from the given alternatives :
(1) Mother-in-Law
(2) Nephew
(3) Grandson
(4) Great grandfather

**5.** Select the odd letters from the given alternatives :
(1) GHI (2) XYZ
(3) VUT (4) CDE

**6.** Select the odd number from the given alternatives :
(1) 43 (2) 22
(3) 13 (4) 41

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.
Shy, Food, Plate, Recess, ?
(1) Monsoon (2) Soon
(3) Eat (4) Lunch

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
XIIIII, IXIIII, IIXIII, IIIXII, IIIIXI, ?
(1) IIIIXII (2) IIIIIXI
(3) IIIIIX (4) XIIIIX

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series.
49, 64, ?, 100, 121
(1) 74 (2) 80
(3) 75 (4) 81

**10.** Nasir's birthday is on Thursday 18th May. On what day of the week will be Rehan's birthday in the same year if Rehan was born on 19th August?
(1) Wednesday
(2) Saturday
(3) Friday
(4) Thursday

**11.** The weights of 4 boxes are 30, 40, 50 and 100 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 190 (2) 180
(3) 160 (4) 140

**12.** From the given alternative words, select the word which cannot be formed using the letters of the given word :
**ECCENTRICITY**
(1) NIECE (2) CREATE
(3) TRINITY (4) RETICENT

**13.** If ETHANOL is coded as HWKDQRO, then how will MIX be coded as?
(1) PLA (2) RFV
(3) BGT (4) NHY

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
24 × 6 – 8 + 2 = ?
(1) 25 (2) 50
(3) 40 (4) 20

**15.** If 10$25 = 8, 12$25 = 10 then what is the value of 14$53 = ?
(1) 13 (2) 15
(3) 11 (4) 9

**16.** Select the missing number from the given responses :

| 45 | 11 | 1 |
|---|---|---|
| 12 | 0 | 1 |
| 57 | 11 | ? |

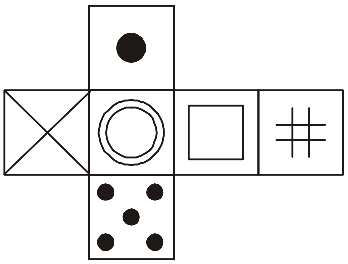
(1) 0 (2) 68
(3) 2 (4) 10

**17.** X and Y start from the same point. X walks 40 m north, then turns West and walks 80 m, then turns to his right and walks 50 m. At the same time, Y walks 90 m North. Where is Y now with respect to the position of X?
(1) Y is 30 m to the East of X
(2) Y is 80 m to the West of X
(3) Y is 30 m to the West of X
(4) Y is 80 m to the East of X

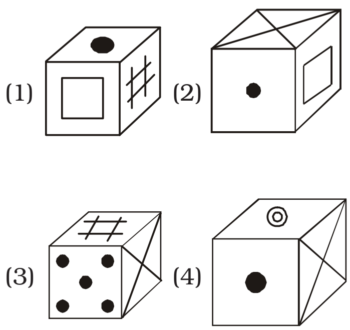
**18.** In this question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.
**Statement :** Should one year of army training be compulsory for all Indian citizens?
**Arguments :**
I. No, the costs of training will be prohibitive and one year of labour will be lost.
II. Yes, army training helps make better citizens.
(1) if only argument I is strong.
(2) if only argument II is strong.
(3) if both I and II are strong.
(4) if neither I nor II is strong.

**19.** Which of the following cube in the answer figure can not be made based on the unfolded cube in the question figure?

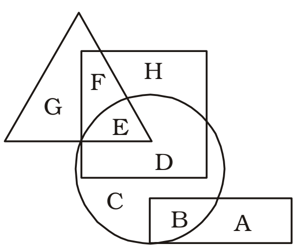
**Question Figure :**



**Answer Figures :**



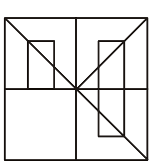
**20.** In the following figure, square represents lawyers, triangle represents cyclists, circle represents men and rectangle represents post-graduates. Which set of letters represents men who are not cyclists?



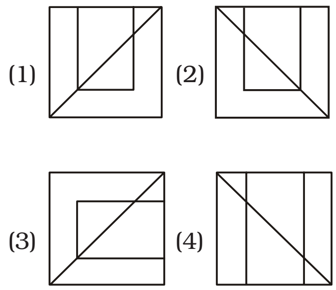

(1) B, C, D (2) E
(3) G, F (4) G, F, H, A

**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**

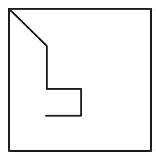


**Answer Figures :**

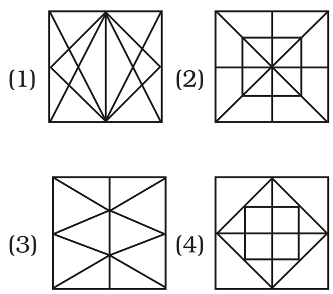


**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**

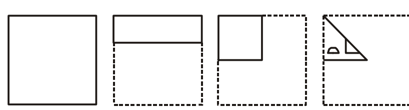


**Answer Figures :**

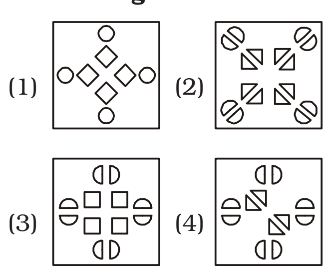


**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures :**

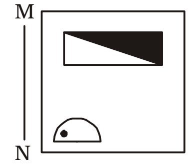


**Answer Figures :**

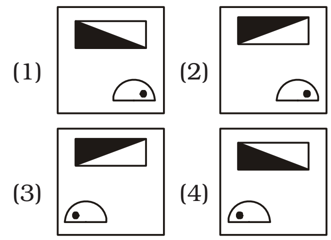


**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**



**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 22, 43 etc. and 'Z' can be represented by 65, 77 etc. Similarly, you have to identify the set for the word **'CUBE'**.

**Matrix–I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | J | C | E | J | J |
| 1 | A | B | H | I | G |
| 2 | H | I | K | B | L |
| 3 | I | D | G | D | H |
| 4 | C | A | M | K | I |

**Matrix–II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | T | V | V | R | P |
| 6 | Z | R | P | W | R |
| 7 | Y | T | Z | P | P |
| 8 | T | Q | W | R | X |
| 9 | U | S | S | Y | Q |

(1) 23, 12, 44, 77
(2) 22, 76, 03, 04
(3) 11, 34, 20, 10
(4) 40, 95, 11, 02

## GENERAL AWARENESS

**26.** India's first official census operation was undertaken in which year?
(1) 1841 (2) 1881
(3) 1921 (4) 1961

**27.** The change in the optimal quantity of a good when its price changes and the consumer's income is adjusted so that she can just buy the bundle that she was buying before the price change is called?
(1) Law of demand
(2) Substitution effect
(3) Problem of choice
(4) Optimal choice

**28.** "Relief of the disabled and unemployable" is listed in the _____ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** _______ amends the Constitution.
(1) Ministry of Defence
(2) Prime Minister's Office
(3) Parliament
(4) Securities and Exchange Board of India

**30.** According to the categories of land mentioned in the Chola inscriptions ______ was known as the land gifted to temples?
(1) Vellanvagai
(2) Brahmadeya
(3) Shalabhoga
(4) Devadana

**31.** Rajendra I was the son of?
(1) Bindusara I
(2) Devabhuti I
(3) Skanda Gupta I
(4) Rajaraja I

**32.** _______ is a cold desert lying in the Great Himalayas.
(1) Ladakh (2) Satpura
(3) Aravalli (4) Vindhya

**33.** The method of soil conservation in which different crops are grown in alternate rows and are sown at different times to protect the soil from rain wash is called?
(1) Mulching
(2) Intercropping
(3) Rock dam
(4) Terrace farming

**34.** In each testes in a male reproductive system, there are _____ compartments called testicular lobules.
(1) 150 (2) 200
(3) 250 (4) 300

**35.** The predominant stage of the life cycle of a moss is the gametophyte which consists of two stages. The second stage is the _______ stage.
(1) Agar (2) Leafy
(3) Chlorella (4) protonema

**36.** In Animal Kingdom classification, which of the following is not a Phylum?
(1) Mollusca
(2) Chordata
(3) Coelomates
(4) Anneldia

**37.** Friction is caused by the ______ on the two surfaces in contact.
(1) irregularities
(2) smoothness
(3) densities
(4) gaps

**38.** The motion of a freely falling body is an example of ______ motion.
(1) uniformly accelerated
(2) non-uniformly accelerated
(3) constant velocity
(4) constant speed

**39.** ______ (HHDD) is a technology where the conventional disk drive is combined with non-volatile flash memory, of typically 128 MB or more to cache data during normal use.
(1) Hyper Hard Disk Drive
(2) Hybrid Hard Disk Drive
(3) Hybrid Helium Disk Drive
(4) Hyper Helium Disk Drive

**40.** Chemical formula for sulphurous acid is :
(1) $H_2SO_4$ (2) $H_2SO_3$
(3) $H_3SO_3$ (4) $H_3SO_4$

**41.** The temperature at which a solid melts to become a liquid at the atmospheric pressure is called its __________.
(1) Crystallisation
(2) Melting point
(3) Evaporation
(4) Galvanisation

**42.** ______ is the interaction in which one species benefits and the other is neither harmed nor benefited.
(1) Predation
(2) Commensalism
(3) Competition
(4) Parasitism

**43.** _________ scheme by the Central Government aims at providing affordable aviation by making domestic flight charges economically accessible for middle-class citizens of India.
(1) Uday Desh Ka Aam Nagrik
(2) Urja Ganga
(3) Ek Bharat Shrestha Bharat
(4) Namami Ganga Yojana

**44.** Who invented the hot air balloon?
(1) Montgolfier brothers
(2) Wright brothers
(3) Lisitsyn brothers
(4) Walton brothers

**45.** Which nation won the highest number of medals at 2016 Rio Olympics?
(1) Great Britain
(2) USA
(3) China
(4) Russia

**46.** Group of Monuments at Hampi is located in?
(1) West Bengal
(2) Gujarat
(3) Karnataka
(4) Tamil Nadu

**47.** Which of the following is India's highest civilian award?
(1) Padma Bhushan
(2) Param Vir Chakra
(3) Padma Vibhushan
(4) Bharat Ratna

**48.** Which of the statements given below are correct?
1. The author of the novel 'An Affair Downstairs' is Sherri Browning.
2. The author of the novel 'White Teeth' is Zadie Smith.
3. The author of the novel 'Atonement' is Ian McEwan.

(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** Recently, scientists have found second Great Spot 24000 km across and 12000 km wide on which planet?
(1) Saturn (2) Mars
(3) Jupiter (4) Mercury

**50.** The Sundarbans Reserve Forest (SRF) which is adjacent to India's Sundarbans National Park is located in which neighbouring country?
(1) Bhutan
(2) Pakistan
(3) Bangladesh
(4) Nepal

## QUANTITATIVE APTITUDE

**51.** Select the correct option : Convert binary 10110 to decimal.
(1) 22 (2) 20
(3) 18 (4) 16

**52.** A, B and C can do a job working alone in 12, 16 and 24 days respectively. In how many days can they do the job if they work together?
(1) $\frac{16}{3}$ (2) $\frac{15}{4}$
(3) $\frac{17}{3}$ (4) $\frac{19}{4}$

**53.** The diagonal of a square is 10 cm. What is the length (in cm.) of its side?
(1) 5 (2) $5\sqrt{2}$
(3) $10\sqrt{2}$ (4) $\frac{5}{\sqrt{2}}$

**54.** If on a Sale there is 40% discount on the marked price of Rs. 1000, but the sale is done at Rs. 510 only. Then what additional discount (in %) did the customer get?
(1) 25 (2) 15
(3) 10 (4) 30

**55.** What is the third proportional to 9 and 45?
(1) 405 (2) 225
(3) 5 (4) 81

**56.** In a class of 39 students there are 26 girls. The average weight of these girls is 42 kg. and average weight of the whole class is 48 kg. What is the average weight (in kg.) of the boys of the class?
(1) 54 (2) 66
(3) 60 (4) 62

**57.** If a saree is sold for Rs. 2880 the seller will face 10% loss. At what price (in Rs.) should he sell to gain 20% profit?
(1) 4830 (2) 3840
(3) 3480 (4) 4380

**58.** Priya got 9 marks more in History than what she got in Geography. Her history marks are 56% of the sum of her History and Geography marks. What are her Geography marks?
(1) 42 (2) 65
(3) 53 (4) 33

**59.** To travel 720 km, an Express train takes six hours more than Duronto. If however, the speed of the Express train is doubled, it takes two hours less than that of Duronto. The speed of Duronto (in km/hr) is
(1) 60 (2) 72
(3) 66 (4) 78

**60.** What is the difference (in Rs.) between the compound interests on Rs. 1000 for 1 year at 10% per annum compounded yearly and half-yearly?
(1) 1.5 (2) 0.5
(3) 2.5 (4) 3.5

**61.** If $7x-\left(\frac{3}{2}\right)\times(4x-9)=6.5$, then the value of $x$ is
(1) 7 (2) 20
(3) –7 (4) –20

**62.** If $a + b = 8$ and $ab = 15$, then what is the value of $(a^3 + b^3)$?
(1) 98 (2) 152
(3) 124 (4) 260

**63.** The sum of a non-zero number and four times its reciprocal is $\frac{17}{2}$. What is the number?
(1) 8 (2) 12
(3) 16 (4) 4

**64.** The 5th and 9th term of an arithmetic progression are 7 and 13 respectively. What is the 15th term?
(1) 22 (2) 21
(3) 55 (4) 59

**65.** What is the reflection of the point (6, –3) in the line $y = 2$?
(1) (–2, –3) (2) (6, 7)
(3) (–6, 7) (4) (–2, 3)

**66.** Point A (4, 2) divides segment BC in the ratio 2 : 5. The coordinates of B are (2, 6) and that C are (7, $y$). What is the value of $y$?
(1) 8 (2) –8
(3) 6 (4) –6

**67.** At what point does the line $2x - 3y = 6$ cuts the $x$–axis?
(1) (–3, 0) (2) (0, 3)
(3) (0, –3) (4) (3, 0)

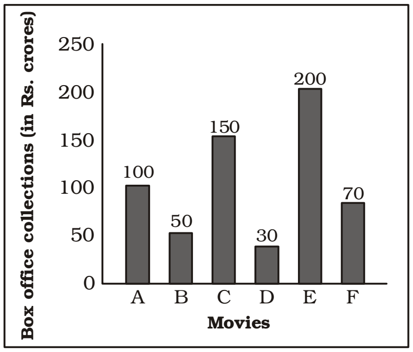
**68.** ΔABC is right angled at B. BD is an altitude. AD = 4 cm and DC = 9 cm. What is the value of BD (in cm.)?
(1) 5 (2) 4.5
(3) 5.5 (4) 6

**69.** tan 45° + cosec 60° = ?
(1) $\frac{(1+2\sqrt{2})}{2}$ (2) $\frac{(\sqrt{3}+2)}{\sqrt{6}}$
(3) $\frac{5}{\sqrt{3}}$ (4) $\frac{(3+2\sqrt{3})}{3}$

**70.** ΔXYZ is right angled at Y. If $m\angle Z = 60°$, then cosec X = ?
(1) 2 (2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$ (4) $\frac{1}{\sqrt{3}}$

**71.** If cosec θ = $\frac{17}{8}$, then cot θ = ?
(1) $\frac{17}{8}$ (2) $\frac{15}{8}$
(3) $\frac{8}{15}$ (4) $\frac{17}{15}$

**Directions (72–75) :** The bar graph shows box office collections (in Rs. crores) of six movies (A, B, C, D, E and F). Study the diagram and answer the following questions.




**72.** Which movie grossed the second highest box office collections?
(1) E (2) C
(3) B (4) D

**73.** By what percent collections of movie D were lower than that of movie B ?
(1) 66.7 (2) 40
(3) 20 (4) 60

**74.** Collection of movie C is equal to the combined collections of which movies?
(1) F, A and D
(2) B, D and F
(3) B and D
(4) A, B and F

**75.** If the producer gets 60% of the box office collections, how much (in Rs. crores) did the producer of the movies A and E get?
(1) 120 (2) 60
(3) 180 (4) 300



## ENGLISH COMPREHENSION

**Directions (76–76) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** While he went beside (1)/ with our decisions, we were (2)/ never sure he totally agreed. (3)/No Error (4)

**77.** The after morning (1)/ she woke to the first ray of (2)/ light through the window. (3)/ No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

**78.** The psychopath gets a _______ sense of enjoyment from torturing animals.
(1) perverse (2) agreeable
(3) happy (4) reasonable

**79.** When Jaspal got angry, he started to ________ his feelings with his hands.
(1) participate
(2) immolate
(3) intoxicate
(4) gesticulate

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Fossilize**
(1) Amalgamate
(2) Dissolve
(3) Flex
(4) Liquefy

**81. Depict**
(1) Conceal
(2) Distort
(3) Characterize
(4) Suppress

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Differ**
(1) Alter (2) Concur
(3) Digress (4) Vary

**83. Salve**
(1) Cerate (2) Liniment
(3) Remedy (4) Blockage

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Gnash your teeth**
(1) Express rage
(2) Brush your teeth
(3) Laugh hysterically
(4) Take a big bite

**85. Let something slip through one's fingers**
(1) Lose a wedding ring
(2) Not be able to understand a difficult concept
(3) Let go of certain unpleasant things
(4) To waste an opportunity to achieve something

**Directions (86–87) :** In the following questions, out of the four alternatives, select the alternative which will improve the bracketed part of the sentence. In case no improvement is needed, select "No Improvement".

**86.** What would you like **(to do it)** for your birthday?
(1) to do
(2) doing
(3) does
(4) No Improvement

**87.** You must **(be mistake).**
(1) be mistakenly
(2) be mistaken
(3) be mistook
(4) No Improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. Complete with regard to every detail.**
(1) Thorough
(2) Lackadaisical
(3) Lax
(4) Cursory

**89. The faculty or power of using one's will.**
(1) Antagonism
(2) Aversion
(3) Rejection
(4) Volition

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) jukstapose
(2) jaxtapuse
(3) juxtapose
(4) jaxtapose

**91.** (1) amusemant
(2) ammusement
(3) ammusemant
(4) amusement

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. Evidently it was too**
X. of a deadly-looking cobra or
Y. two we saw no reptiles
Z. dry for game, and with the exception
(1) YZX (2) YXZ
(3) XZY (4) ZXY

**93. Some of these**
X. height of more than
Y. 2000 feet above the sea
Z. rocks rise to the
(1) YZX (2) ZXY
(3) YXZ (4) XZY

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
**I will wash the car every Sunday.**
(1) The car is washed by me every Sunday.
(2) Every Sunday by me the car is to be washed.
(3) Every Sunday by myself the car is to be washed.
(4) The car will be washed by me every Sunday.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
**The watchman said, ''Thief! Thief! Catch him!''**
(1) The watchman shouted to the crowd to catch the thief.
(2) The watchman shouted to the crowd, thief, thief, catch him.
(3) The watchman shouted to the crowd, catch the thief.
(4) The watchman shouted to the crowd, thief, catch him.

**Directions (96–100) :** A passage is given with five questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

There's more than the 101-seater dining table at the Falaknuma Palace that is awe inspiring. The library done in rosewood and mahogany is a place that will force anyone to pause, if only to admire the fine original polish, the furniture and the walnut carved high roof. The last is supposedly an imitation of the one at Windsor Castle.

The library is almost the size of a large banquet hall and acts as the passage to other parts of the palace including the dining area. For years the palace had no librarian because they couldn't find the right person to do justice to the treasure trove of books collected by the Nizam's family over several decades. That is until they found Asif Husain Arastu who belongs to the family that owned the famous A A Husain book store in Abids. So when his friend and historian Anuradha Naik pointed out the palace's requirement at the library, Husain was delighted. On his very first day as the librarian at the magnificent Taj Falaknuma palace, Asif Husain found a reference book on 'How to paint grass' by Alfred East.

**96.** Which of the following is false about Mr. Arastu?
(1) He was a descendent of the Nizam's family
(2) He was the librarian at the Falaknuma Palace
(3) He owned a book store
(4) He was a friend of Anuradha Naik

**97.** The roof of the library had carvings made of which wood?
(1) Rosewood
(2) Mahogany
(3) Sandalwood
(4) Walnut

**98.** Name the author of the book that Mr. Hussain found on his first day as the librarian?
(1) Alfred East
(2) Anuradha Naik
(3) Mark Twain
(4) Charles Dickens

**99.** The books at the library were collected by _________.
(1) Hyderabad University
(2) Mrs. Anuradha Naik
(3) The Nizam's Family
(4) Mr. Asif Husain Arastu

**100.** Which part of the palace is an imitation of the Windsor Palace?
(1) 101–seater dining table
(2) The library's roof
(3) The banquet hall
(4) The library's furniture

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (4) | **3.** (4) | **4.** (1) |
| **5.** (3) | **6.** (2) | **7.** (1) | **8.** (3) |
| **9.** (4) | **10.** (2) | **11.** (3) | **12.** (2) |
| **13.** (1) | **14.** (4) | **15.** (1) | **16.** (3) |
| **17.** (4) | **18.** (1) | **19.** (2) | **20.** (1) |
| **21.** (1) | **22.** (2) | **23.** (3) | **24.** (2) |
| **25.** (4) | **26.** (2) | **27.** (2) | **28.** (2) |
| **29.** (3) | **30.** (4) | **31.** (4) | **32.** (1) |
| **33.** (2) | **34.** (3) | **35.** (2) | **36.** (3) |
| **37.** (1) | **38.** (1) | **39.** (2) | **40.** (2) |
| **41.** (2) | **42.** (2) | **43.** (1) | **44.** (1) |
| **45.** (2) | **46.** (3) | **47.** (4) | **48.** (4) |
| **49.** (3) | **50.** (3) | **51.** (1) | **52.** (1) |
| **53.** (2) | **54.** (2) | **55.** (2) | **56.** (3) |
| **57.** (2) | **58.** (4) | **59.** (2) | **60.** (3) |
| **61.** (3) | **62.** (2) | **63.** (1) | **64.** (1) |
| **65.** (2) | **66.** (2) | **67.** (4) | **68.** (4) |
| **69.** (4) | **70.** (1) | **71.** (2) | **72.** (2) |
| **73.** (2) | **74.** (2) | **75.** (3) | **76.** (1) |
| **77.** (1) | **78.** (1) | **79.** (4) | **80.** (1) |
| **81.** (3) | **82.** (2) | **83.** (4) | **84.** (1) |
| **85.** (4) | **86.** (1) | **87.** (2) | **88.** (1) |
| **89.** (4) | **90.** (3) | **91.** (4) | **92.** (4) |
| **93.** (2) | **94.** (4) | **95.** (1) | **96.** (1) |
| **97.** (4) | **98.** (1) | **99.** (3) | **100.** (2) |

## EXPLANATIONS

**1.** (1) The flow of water in the river is known as stream. Similarly, the flow of water in the ocean is known as current.

**2.** (4) W U S
↓ ↓ ↓
D F H
Pairs of opposite letters.
Similarly,
M K I
↓ ↓ ↓
N P R

**3.** (4) $\frac{-3}{7} \Rightarrow \frac{7}{3}$
Numerator and denominator exchange positions and positive fraction becomes negative and vice–versa. Thus,
$\frac{9}{2} \Rightarrow -\frac{2}{9}$

**4.** (1) Except Mother–in–law, all others are male members of a family. Again, Mother–in–law is not direct lineage of a family.

**5.** (3) $G \xrightarrow{+1} H \xrightarrow{+1} I$
$X \xrightarrow{+1} Y \xrightarrow{+1} Z$
$C \xrightarrow{+1} D \xrightarrow{+1} E$
But, $V \xrightarrow{-1} U \xrightarrow{-1} T$

**6.** (2) Except the number 22, all others are odd numbers. Again, 43 13 and 41 are Prime Numbers.

**7.** (1) In each next term, the number of alphabet is increasing by one.

**8.** (3) In each next term, 'X' shifts one place to the right.

**9.** (4) Consecutive perfect squares are given :
$(7)^2 = 49$
$(8)^2 = 64$
$(9)^2 = 81$
$(10)^2 = 100$
$(11)^2 = 121$

**10.** (2) 18th May = Thursday
Number of days from 18th May to 19th August
= 13 + 30 + 31 + 19 = 93 days
= 13 weeks + 2 days
∴ 19th August = Thursday + 2
= Saturday

**11.** (3) Possible weights (in kilograms) of combinations of boxes :
(i) 30 + 40 = 70
(ii) 30 + 50 = 80
(iii) 30 + 100 = 130
(iv) 40 + 50 = 90
(v) 40 + 100 = 140
(vi) 50 + 100 = 150
(vii) 30 + 40 + 50 = 120
(viii) 30 + 40 + 100 = 170
(ix) 30 + 50 + 100 = 180
(x) 40 + 50 + 100 = 190
(xi) 30 + 40 + 50 + 100 = 220

**12.** (2) There is no 'A' letter in the given word. Therefore, the word CREATE cannot be formed.
[E] C [C E N] T R [I] C I T
Y ⇒ NIECE
E C C E [N T R I] C [I T Y]
⇒ TRINITY
[E] C [C E N T R I] C I [T]
Y ⇒ RETICENT

**13.** (1)
E T H A N O L
↓+3 ↓+3 ↓+3 ↓+3 ↓+3 ↓+3 ↓+3
H W K D Q R O
Therefore,
M I X
↓+3 ↓+3 ↓+3
P L A

**14.** (4)

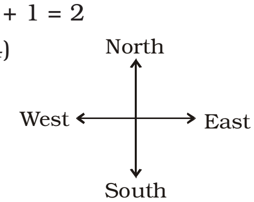
| + ⇒ × | − ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ − |

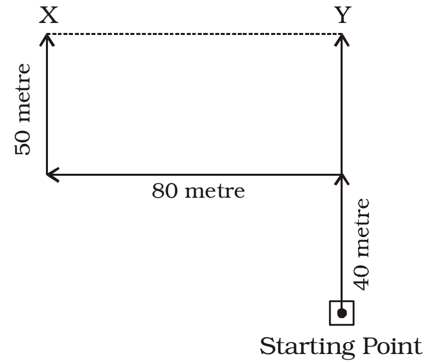
24 × 6 − 8 + 2 = ?
⇒ ? = 24 ÷ 6 + 8 × 2
= 4 + 16 = 20

**15.** (1) 10 \$ 25 = (1 + 0) + (2 + 5)
= 1 + 7 = 8
12 \$ 25 = (1 + 2) + (2 + 5)
= 3 + 7 = 10
Therefore,
14 \$ 53 = (1 + 4) + (5 + 3)
= 5 + 8 = 13

**16.** (3) 45 + 12 = 57
11 + 0 = 11
Therefore,
1 + 1 = 2

**17.** (4)

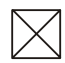


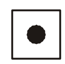




Y is 80 metre to the east of X.

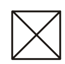
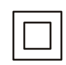
**18.** (1) Only argument I seems to be strong. One year of army training cannot serve any purpose.

**19.** (2) After folding the figure :

 lies opposite .

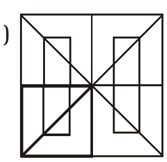
 lies opposite .

lies opposite .

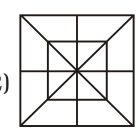
 cannot be on the faces adjacent to . Therefore, the cube given in the option (2) cannot be formed.

**20.** (1) Men who are not cyclists can be represented by letters present in the circle but outside the triangle. Such letters are B, C and D.

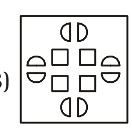
**21.** (1)



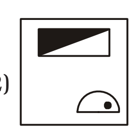
**22.** (2)



**23.** (3)



**24.** (2)



**25.** (4) C = 01, 40
U = 95
B = 11, 23
E = 02

| Option | C | U | B | E |
|---|---|---|---|---|
| (1) | 23 | 12 | 44 | 77 |
| (2) | 22 | 76 | 03 | 04 |
| (3) | 11 | 34 | 20 | 10 |
| (4) | 40 | 95 | 11 | 02 |

**26.** (2) A systematic and modern population census, in its present form was conducted non synchronously between 1865 and 1872 in different parts of the country. This effort culminating in 1872 has been popularly labeled as the first population census of India However, the first synchronous census in India was held in 1881. Since then, censuses have been undertaken uninterruptedly once every ten year. The first census after independence was conducted in 1951.

**27.** (2) The substitution effect results from a change in demand price, which affects relative prices given that the prices of other goods remain unchanged. The change in relative prices then causes a change in quantity demanded and a movement along the demand curve. With the substitution effect, the price of this good changes, while other prices are fixed.

**28.** (2) The State List or List-II is a list of 61 items (Initially there were 66 items in the list) in Schedule Seven to the Constitution of India. 'Relief of the disabled and unemployable" is listed in the State List.

**29.** (3) Article 368 in Part XX of the Constitution deals with the powers of Parliament to amend the Constitution and its procedure. It states that the Parliament may, in exercise of its constituent power, amend by way of addition, variation or repeal any provision of the Constitution in accordance with the procedure laid down for the purpose.

**30.** (4) According to Chola inscriptions, there were five types of 'land gifts' that Chola kings gave to their people :
- shalabhoga was land for the maintenance of a school.
- devadana/tirunamattukkani was land gifted to temples.

**31.** (4) Rajendra I was a Chola emperor of India who succeeded his father Rajaraja Chola I to the throne in 1014 CE.He took upon the title 'Gangaikonda Chola' post his victories over the Palas, Chalukyas, Kalinga, Gangas, Pandyas, Cheras, etc. and moved his capital from Thanjavur to Gangaikondacholapuram, where he built a Shiva temple.

**32.** (1) The valley of Ladakh is situated at quite a high altitude, which varies from one place to the other. Infact, the geographical location of Ladakh ranges from 9,000 ft (2,750 m) high at Kargil to 25,170 ft (7,672m) high at Saser Kangri, in the Karakoram Range. It is a high altitude cold desert as the Himalayas create a rain shadow, generally denying entry to monsoon clouds. The main source of water is the winter snowfall on the mountains.

**33.** (2) Intercropping is a multiple cropping practice involving growing two or more crops in proximity. The most common goal of intercropping is to produce a greater yield on a given piece of land by making use of resources or ecological processes that would otherwise not be utilized by a single crop.

**34.** (3) The spermatozoa are made in the semiferous tubules of the testes. Septa which emanate from this capsule to subdivide the testis into about 250 in complete lobules. The septa converge towards the midline of the posterior border, meeting along a thickening of the tunica albuginea called the mediastinum testis.

**35.** (2) The life cycle of most mosses begins with the release of spores from a capsule, which opens when a small, lid like structure, called the operculum, degenerates. A single spore germinates to form a branched, filamentous protonema, from which a leafy gametophyte develops.

**36.** (3) Animals which have a right body cavity are called coelomates. Example includes Annelid, Chordates and Arthropoda.

**37.** (1) Friction is caused by the interlocking of irregularities in the surface of two objects which are in contact with each other. To move one object over the other, we have to apply a force to overcome interlocking of the irregularities in their surfaces. The force friction is greater if very rough surfaces are involved.

**38.** (1) Uniform or constant acceleration is a type of motionin which the velocity of an object changes by an equal amount in every equal time period. A frequently cited example of uniform acceleration is that of an object in free fall in a uniform gravitational field.

**39.** (2) A hybrid hard drive (HHD), sometimes known as a solid-state hybrid drive (SSHD) is a mass storage device that combines a conventional hard disk drive (HDD) and a NAND flash module. Hybrid hard drives attempt to bridge the gap between flash and fixed-disk magnetic storage.

**40.** (2) Sulfurous acid is the chemical compound with the formula $H_2SO_3$. It is an intermediate species in the formation of acid rain from sulfur dioxide.

**41.** (2) The melting point of a solid is the temperature at which it changes state from solid to liquid at atmospheric pressure. At the melting point the solid and liquid phase exists in equilibrium. The melting point of a substance depends on pressure and is usually specified at standard pressure.

**42.** (2) Commensalism is a type of relationship between two living organisms in which one organism benefits from the other without harming it. A commensal species benefits from another species by obtaining locomotion, shelter, food, or support from the host species, which (for the most part) neither benefits nor is harmed. Commensalism ranges from brief interactions between species to life-long symbiosis.

**43.** (1) "Ude Desh Ka Aam Naagrik" is first–of–its–kind scheme globally will create affordable yet economically viable and profitable flights on regional routes so that flying becomes affordable to the common man even in small towns. It envisages providing connectivity to un-served and under-served airports of the country through revival of existing air-strips and airports.

**44.** (1) Joseph–Michel Montgolfier and Jacques–Étienne Montgolfier) were paper manufacturers from Annonay, in Ardèche, France best known as inventors of the Montgolfière-style hot air balloon, globe aérostatique.

**45.** (2) The 2016 Summer Olympics held in Rio de Janeiro, Brazil, from 5 to 21 August, 2016. The United States topped the medal table for the fifth time in the past six Summer Olympics, winning the most golds (46) and most medals overall (121), as well as its 1,000th Olympic gold medal overall. Great Britain finished second, ahead of China.

**46.** (3) Traditionally known as Pampakshetra of Kishkindha, Hampi is situated on the southern bank of the river Tungabhadra in Karnataka. Once it was the seat of the mighty Vijayanagara empire. This site that holds significance both historically and architecturally has several monuments, particularly the Virupaksha Temple that is dedicated to the patron deity of the Vijayanagara rulers, Lord Virupaksha.

**47.** (4) Bharat Ratna, the country's highest civilian award instituted in 1954, is given in recognition of exceptional service, performance of the highest order in any field of human endeavour. Any person without distinction of race, occupation, position or sex is eligible for this award. The number of annual awards is restricted to a maximum of three in a particular year.

**48.** (4) An Affair Downstairs is a novel by Sherri Browning

- White Teeth is novel by Zadie Smith
- Atonement is a 2001 British metafiction novel written by Ian McEwan

**49.** (3) Scientists found that the dark expanse is 24,000 kilometers across and 12,000 kilometers wide. It's in the upper atmosphere and much cooler than the hot surroundings, thus the name Great Cold Spot. And unlike the giant planet's familiar Great Red Spot, this newly discovered weather system is continually changing in shape and size. It's formed by the energy from Jupiter's polar auroras.

**50.** (3) The Sundarbans Reserve Forest (SRF), located in the southwest of Bangladesh between the river Baleswar in the East and the Harinbanga in the West, adjoining to the Bay of Bengal, is the largest contiguous mangrove forest in the world. The Sundarbans mangrove forest, one of the largest such forests in the world (140,000 ha), lies on the delta of the Ganges, Brahmaputra and Meghna rivers on the Bay of Bengal.

**51.** (1) $(10110)_{10}$
$= 1 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0$
$= 16 + 4 + 2 = 22$

**52.** (1) (A + B + C)'s 1 day's work

$$= \frac{1}{12} + \frac{1}{16} + \frac{1}{24}$$

$$= \frac{4+3+2}{48} = \frac{9}{48} = \frac{3}{16}$$

$$\therefore \text{ Required time} = \frac{16}{3} \text{ days}$$

**53.** (2) Diagonal of square = 10 cm

$$\Rightarrow \sqrt{2} \times \text{Side} = 10$$

$$\Rightarrow \text{Side} = \frac{10}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{10\sqrt{2}}{2}$$

$= 5\sqrt{2}$ cm.

**54.** (2) Let additional discount be $x$%

According to the question,
60% of (100–$x$)% of 1000
= 510

$$\Rightarrow 1000 \times \frac{60}{100} \times \frac{100-x}{100}$$

= 510

$$\Rightarrow 100 - x = \frac{510 \times 100 \times 100}{1000 \times 60}$$

$\Rightarrow 100 - x = 85$
$\Rightarrow x = 100 - 85 = 15\%$

**55.** (2) Third proportional to 9 and 45

$$= \frac{45^2}{9} = \frac{45 \times 45}{9} = 225$$

**56.** (3) Average weight of boys

$$= \left(\frac{39 \times 48 - 26 \times 42}{13}\right) \text{ kg.}$$

$$= \left(\frac{1872 - 1092}{13}\right) \text{ kg.}$$

$$= \left(\frac{780}{13}\right) \text{ kg.} = 60 \text{ kg.}$$

**57.** (2) Cost price of saree

$$= \text{Rs. } \left(\frac{100 \times 2880}{90}\right) = \text{Rs. } 3200$$

For 20% profit,
Selling price of saree
= 120% of 3200

$$= \text{Rs. } \left(\frac{3200 \times 120}{100}\right) = \text{Rs. } 3840$$

**58.** (4) Let marks of Geography be $x$.

$\therefore$ Marks of History $= x + 9$
According to the question,
$\Rightarrow x + 9 = 56\%$ of $(x + x + 9)$
$\Rightarrow x + 9 = 56\%$ of $(2x + 9)$

$$\Rightarrow x + 9 = \frac{(2x+9)56}{100}$$

$\Rightarrow 100x + 900 = 112x + 504$
$\Rightarrow 12x = 900 - 504 = 396$

$$\Rightarrow x = \frac{396}{12} = 33$$

**59.** (2) Let the speed of Duronto be $x$ km/hr.

Speed of Express train $= y$ km/hr.

According to the question,

$$\frac{720}{y} - \frac{720}{x} = 6 \quad .....(i)$$

$$\frac{720}{x} - \frac{720}{2y} = 2 \quad .....(ii)$$

By adding equations (i) and (ii),

$$\frac{720}{y} - \frac{720}{2y} = 6 + 2$$

$$\Rightarrow \frac{360}{y} = 8$$

$$\Rightarrow y = \frac{360}{8} = 45 \text{ kmph.}$$

From equation (i),

$$\frac{720}{45} - \frac{720}{x} = 6$$

$$\Rightarrow 16 - 6 = \frac{720}{x}$$

$\Rightarrow 10x = 720$

$\Rightarrow x = 72$ kmph.

**60.** (3) $A = P\left(1+\frac{R}{100}\right)^n$

$$= 1000\left(1+\frac{10}{100}\right)$$

$$= 1000 \times \frac{110}{100} = \text{Rs. } 1100$$

Annual C.I. = A – P

= 1100–1000 = Rs.100

In when interest is compounded half yearly,

$$A = P\left(1+\frac{r}{100}\right)^n$$

$$= 1000\left(1+\frac{5}{100}\right)^2$$

$$= 1000 \times \frac{105}{100} \times \frac{105}{100}$$

= Rs.1102.5

Half yearly C.I. = A – P

= 1102.5 – 1000 = Rs. 102.5

$\therefore$ Required difference

= 102.5 – 100 = Rs. 2.5

**61.** (3) $7x - \frac{3}{2} \times (4x - 9) = 6.5$

$\Rightarrow 14x - 12x + 27$

$= 6.5 \times 2 = 13$

$\Rightarrow 2x = 13 - 27 = -14$

$$\Rightarrow x = \frac{-14}{2} = -7$$

**62.** (2) $a + b = 8$ and $ab = 15$

$\therefore a^3 + b^3 = (a + b)^3 - 3ab\,(a + b)$

$= (8)^3 - 3 \times 15\,(8)$

$= 512 - 360 = 152$

**63.** (1) Let the number be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$$x + \frac{4}{x} = \frac{17}{2} \Rightarrow \frac{x^2+4}{x} = \frac{17}{2}$$

$\Rightarrow 2x^2 - 17x + 8 = 0$

$\Rightarrow 2x^2 - 16x - x + 8 = 0$

$\Rightarrow 2x\,(x - 8) - 1\,(x - 8) = 0$

$\Rightarrow (x - 8)\,(2x - 1) = 0$

$$\Rightarrow x = 8 \text{ or, } x = \frac{1}{2}$$

**64.** (1) Let the first term of A.P. be $a$ and common difference be $d$.

$\because a_n = a + (n - 1)d$

$\therefore a + 4d = 7 \quad ...(i)$

$a + 8d = 13 \quad ...(ii)$

Equation (i) – (ii),

$a + 4d = 7$

$a + 8d = 13$

$- \; - \quad -$

$-4d = -6$

$$\Rightarrow d = \frac{6}{4} = \frac{3}{2}$$

From equation (i),

$\therefore a = 7 - 4d = 7 - 6 = 1$

$\therefore$ 15th term $= a + 14d$

$$= 1 + 14 \times \frac{3}{2} = 1 + 21 = 22$$

**65.** (2) Reflection of point $(x_1, y_1)$ in the line $ax + by + c = 0$ is :

$$\frac{h - x_1}{a} = \frac{k - y_1}{b}$$

$$= \frac{-2(ax_1 + by_1 + c)}{\sqrt{a^2 + b^2}}$$

Reflection of point (6,–3) in the line $y - 2 = 0$ is :

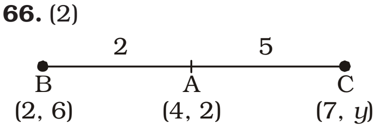
$$\frac{k+3}{1} = \frac{-2(-3-2)}{\sqrt{0+1}}$$

$\Rightarrow k + 3 = 10$

$\Rightarrow k = 7$

$\therefore$ Reflection = (6, 7)

**66.** (2)




Point A, divides segment BC in the ratio 2 : 5.

$$\therefore 2 = \frac{2y + 5 \times 6}{2 + 5}$$

$\Rightarrow 2y + 30 = 14$

$\Rightarrow 2y = 14 - 30 = -16$

$$\Rightarrow y = \frac{-16}{2} = -8$$

**67.** (4) $2x - 3y = 6$

$$\Rightarrow \frac{2x}{6} - \frac{3y}{6} = 1$$

$$= \frac{x}{3} + \frac{y}{(-2)} = 1$$

At Point (3, 0), line cuts $x$–axis.

OR

When a line intersects at $x$–axis, the $y$–co–ordinate of the point of intersection is zero.

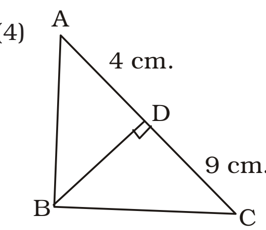
Putting $y = 0$ in $2x - 3y = 6$

$\Rightarrow 2x = 6$

$\Rightarrow x = 3$

$\therefore$ Point of intersection = (3, 0).

**68.** (4)




In $\Delta$ABC,

$\Delta ABD \sim \Delta BCD$

$$\Rightarrow \frac{AD}{BD} = \frac{BD}{DC}$$

$\Rightarrow BD^2 = AD \times DC$

$\Rightarrow BD = \sqrt{AD \times DC} = \sqrt{4 \times 9}$

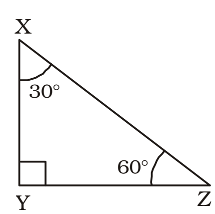
$= \sqrt{36} = 6$ cm.

**69.** (4) tan 45° + cosec 60°

$$= 1 + \frac{2}{\sqrt{3}} = \frac{\sqrt{3}+2}{\sqrt{3}}$$

$$= \frac{(\sqrt{3}+2)\sqrt{3}}{\sqrt{3} \times \sqrt{3}} = \frac{3 + 2\sqrt{3}}{3}$$

**70.** (1)



cosec X = cosec 30° = 2

**71.** (2) $\text{cosec}\theta = \frac{17}{8}$

$\cot\theta = \sqrt{\text{cosec}^2\theta - 1}$

$= \sqrt{\left(\frac{17}{8}\right)^2 - 1} = \sqrt{\frac{289}{64} - 1}$

$= \frac{\sqrt{289 - 64}}{64} = \sqrt{\frac{225}{64}} = \frac{15}{8}$

**72.** (2) Movie 'C' grossed the second highest box office collection.
Film E ⇒ Rs. 200 crores
Film C ⇒ Rs. 150 crores

**73.** (2) Required per cent

$= \frac{50 - 30}{50} \times 100$

$= \frac{20}{50} \times 100 = 40\%$

**74.** (2) Collection of movie C (= Rs. 150 crores) is equal to the combined collection of movie B, D and F (= Rs. 150 crores)

**75.** (3) Earning of producer of movies A and E = 60% of Rs.

300 crores $= \frac{300 \times 60}{100}$

= Rs. 180 crores

**76.** (1) **Go along with something (Phrasal verb)** = agree with someone's opinion; support an idea.
**Look at the sentence :**
School officials go along with your suggestion.
Hence, when/while he went along..... should be used here.

**77.** (1) **Following (Adjective)** = next in time.
**Look at the sentence :**
The following day, there was a ceremony in St. Peter's Square.
**After (Adjective)** = later.
**Look at the sentence :**
He was sorry in after years.
Hence, the next/following morning..... should be used here.

**78.** (1) **Perverse (Adjective)** = irrational; unreasonable, obstinate.
**Happy/agreeable/reasonable (Adjective)** = pleasant; pleasing; appealing; willing.
**Psycopath (Noun)** = a mad man; a deranged person.

**79.** (4) **Gesticulate (Verb)** = gesture; make gestures.
**Immolate (Verb)** = sacrifice; offer as a sacrifice.
**Participate (Verb)** = to take part; be involved.
**Intoxicate (Verb)** = inebriate; make drunk.

**80.** (1) **Fossilize/amalgamate (Verb)** = ossify; become a fossil.
**Look at the sentence :**
The fossilized remains of extinct animals.
**Liquefy/dissolve (Verb)** = become a solution; melt.
**Flex (Verb)** = bend; curve; crook; hook.

**81.** (3) **Depict/characterize (Verb)** = portray; represent.
**Look at the sentence :**
The paintings depicted old Testament scenes.
**Conceal (Verb)** = hide; keep out of sight.
**Distort (Verb)** = twist; contort.
**Suppress (Verb)** = subdue; defeat; vanquish.

**82.** (2) **Vary/differ (Verb)** = be different; be dissimilar.
**Look at the sentence :**
Their opinions differ.
**Concur (Verb)** = agree; be in agreement.
**Look at the sentence :**
The author concurred with the majority.
**Digress (Verb)** = deviate; go off at a tangent.
**Alter (Verb)** = charge; make changes.

**83.** (4) **Salve (Noun)** = an ointment used for promoting the healing.
**Look at the sentence :**
Apply some salve on the wound.
**Blockage (Noun)** = obstruction; stoppage.
**Look at the sentence :**
A blockage in the pipes.
**Cerate (Noun)** = unctuous preparation for external application.
**Liniment (Noun)** = an embrocation for rubbing on the body.
**Remedy (Noun)** = a medicine for a disease.

**84.** (1) **Gnash (Verb)** = grind (one's teeth) together.
**Look at the sentence :**
The boss will definitely start gnashing his teeth once he hears about this printing mishap.

**85.** (4) **to waste an opportunity to achieve something**
**Look at the sentence :**
I let the money slip through my fingers (or grasp).

**86.** (1) **like to do** = want to do
**Look at the sentences :**
I like to do shopping.
What would you like to have – coffee or tea?
⇒ like + to–infinitive

**87.** (2) **be mistaken**
'be' is a helping or an auxiliary verb which is followed by $V_3$ (past participle).
So, be mistaken is apt and appropriate
Mistake ($V_1$) mistook ($V_2$) mistaken ($V_3$)
⇒ Let tea be taken.
⇒ Let work be done.
⇒ I shall be taught by the teacher.

**88.** (1) **Lax (Adjective)** = deficient in firmness; not stringent.
**Cursory (Adjective)** = going rapidly over something.
**Lackadaisical (Adjective)** = lacking enthusiasm; lazy.
⇒ Thorough investigations.

**89.** (4) **Aversion/antagonism (Noun)** = active hostility/opposition.
**Rejection (Noun)** = the action of rejecting.

**90.** (3) **juxtapose** (= set side by side)

**91.** (4) **amusement** (= entertainment; pleasure)

**94.** (4) The car will be washed by me every Sunday.
It is active voice of simple future tense. Its passive voice is formed as follows :
Subject + will be/shall be + $V_3$ + by + object.

**95.** (1) The watchman shouted to the crowd to catch the thief.
It is direct speech of an imperative sentence. Its indirect speech is formed as follows :
⇒ 'said to' changes to shouted/begged/requested/advised as per the context.
⇒ connector 'to–infinitive (here, to catch) is used. ❑❑❑

SET 42

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 23.08.2017 (Shift-II)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives.
Lion : Lioness :: Bull : ?
(1) Animal (2) Cow
(3) Calf (4) Dog

**2.** Select the related letters from the given alternatives.
HIJ : OPQ :: STU : ?
(1) BCD (2) ZAB
(3) XYZ (4) CBA

**3.** Select the related number from the given alternatives.
99 : 101 :: 90 : ?
(1) 111 (2) 909
(3) 110 (4) 10

**4.** Select the odd word from the given alternatives.
(1) Carrot
(2) Brinjal
(3) Radish
(4) Beet

**5.** Select the odd letters from the given alternatives.
(1) EDC (2) IHG
(3) LKM (4) QPO

**6.** Select the odd number from the given alternatives.
(1) 100 (2) 400
(3) 800 (4) 900

**7.** A series is given, with one word missing. Select the correct alternative from the given ones that will complete the series.
Never, Under, Manly, Sauna, Train, ?
(1) Night (2) Terminal
(3) Cancer (4) Anoint

**8.** A series is given, with one term missing. Select the correct alternative from the given ones that will complete the series.
ABC, DEF, HIJ, MNO, STU, ?
(1) XYZ (2) YZA
(3) ZAB (4) ABC

**9.** A series is given, with one number missing. Select the correct alternative from the given ones that will complete the series.
–7.5, 15, -30, 60, ? , 240
(1) 120 (2) –240
(3) –120 (4) 240

**10.** Aniruddh's birthday is on Sunday 2nd April. On what day of the week will be Priyansh's birthday in the same year if Priyansh's was born on 28th October?
(1) Saturday
(2) Wednesday
(3) Friday
(4) Thursday

**11.** The weights of 4 boxes are 100, 90, 80 and 40 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 200 (2) 310
(3) 230 (4) 210

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
MOTLIEST
(1) SMITE (2) MINES
(3) TILES (4) EMITS

**13.** If CROWNED is coded as APMULCB, then how will TAP be coded as?
(1) WNT (2) TYL
(3) RYN (4) XAV

**14.** In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
642 × 6 ÷ 25 + 4 = ?
(1) 11 (2) 64
(3) 18 (4) 7

**15.** If 29$14 = 6, 37$25 = 3 then what is the value of 84$62 = ?
(1) 8 (2) 13
(3) 4 (4) 15

**16.**

| 194 | 100 | ? |
|---|---|---|
| 215 | 113 | 79 |
| 21 | 13 | 29 |

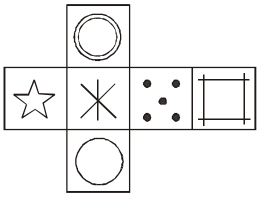
(1) 50 (2) 94
(3) 25 (4) 47

**17.** A marathon route starts and goes 21 km North, then there is a turn towards West where the route goes on for 7 km, then there is a turn towards North where the route goes on for 10 km, then there is a right turn from where the route goes on 7 km to reach the end. Where is it now with reference to its starting position?
(1) 31 km South
(2) 11 km North
(3) 31 km North
(4) 11 km South

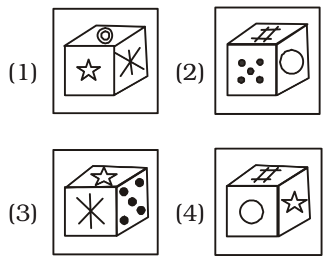
**18.** In the question two statements are given, followed by two conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements.
**Statement :**
All clocks are watches.
Some clocks are alarm.
**Conclusion :**
I. Some alarm are watches.
II. All watches are alarm.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure ?

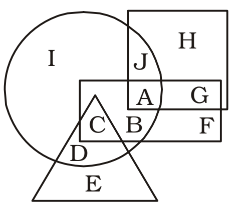
**Question Figure:**



**Answer Figures:**



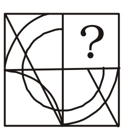

**20.** In the following figure, square represents Americans, triangle represents Astronomers, circle represents Physicians and rectangle represents Men. Which set of letters represents Men who are Physicians ?



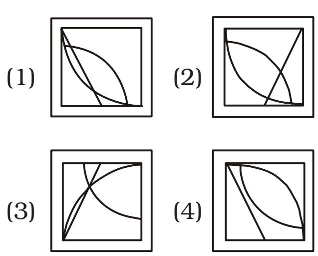

(1) A, B, C (2) J, I
(3) G, F, E (4) I, D, E

**21.** Which answer figure will complete the pattern in the question figure ?

**Question Figure:**

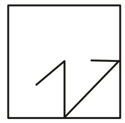



**Answer Figures:**

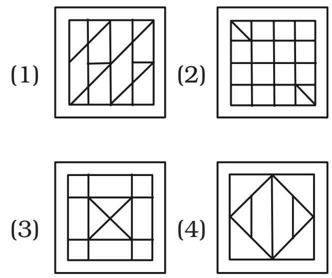



**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure:**

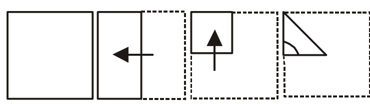


**Answer Figures:**

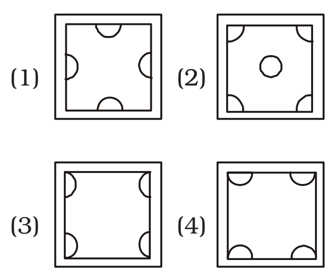



**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures:**

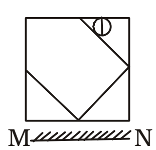


**Answer Figures:**

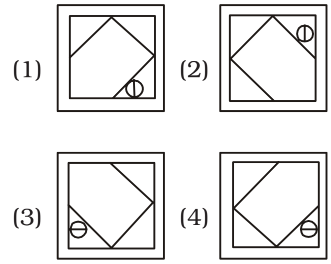



**24.** If a morror is placed on the line MN, then which of the answer figures is the right image of the given figure ?

**Question Figure:**




**Answer Figures:**




**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 14, 30 etc, and 'Z' can be represented by 85, 78 etc. Similarly, you have to identify the set for the word **"PINK"**.

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | J | B | H | D | H |
| 1 | G | E | G | C | K |
| 2 | M | C | A | B | L |
| 3 | K | D | J | I | G |
| 4 | C | D | H | F | M |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | U | O | U | N | P |
| 6 | S | V | X | R | O |
| 7 | P | V | O | Z | Y |
| 8 | Z | N | X | U | X |
| 9 | T | Y | X | T | O |

(1) 43, 03, 78, 88
(2) 59, 33, 86, 14
(3) 00, 11, 79, 98
(4) 11, 14, 85, 76

## GENERAL AWARENESS

**26.** In ___________, the short run equilibrium results in quantity produced being lesser and prices being higher compared to perfect competition.
(1) Monopsony
(2) Monopoly
(3) Oligopoly
(4) Monopolistic Competition

**27.** The average product curve are inverse ____ shaped.
(1) X (2) W
(3) V (4) U

**28.** "Bankruptcy and insolvency" is listed in the _________ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global
(4) Concurrent

**29.** A writ of ________ means that the court orders that the arrested person should be presented before it.
(1) Habeas Corpus
(2) Mandamus
(3) Prohibition
(4) Quo Warranto

**30.** In 1236 Sultan Iltutmish's daughter, _________, became Sultan.
(1) Rehana
(2) Rukhsana
(3) Rashida
(4) Raziyya

**31.** Mahatma Gandhi in 1919 decided to launch a nationwide satyagrah against the proposed ________.
(1) Simon Commission
(2) Rowlatt Act
(3) Salt Act
(4) Pitt's India Act

**32.** ______ determines colour, texture, chemical properties, mineral content and permeability of soil.
(1) Flora & Fauna
(2) Time
(3) Climate
(4) Parent rock

**33.** The innermost layer is the core with a radius of about _______ km.
(1) 500 (2) 6500
(3) 9500 (4) 3500

**34.** The_________ are the primary female sex organs that produce the female gamete (ovum) and several steroid hormones (ovarian hormones).
(1) cervix
(2) uterus
(3) ovaries
(4) clitoris

**35.** Bryophytes are also called ___________ of the plant kingdom.
(1) mammals
(2) amphibians
(3) reptiles
(4) insecta

**36.** Animals belonging to phylum ________ are fundamentally characterised by the presence of a notochord, a dorsal hollow nerve cord and paired pharyngeal gill slits.
(1) annelida
(2) chordata
(3) arthropoda
(4) platyhelminthes

**37.** A ball rolling along the ground gradually slows down and finally comes to rest is due to _______.
(1) friction
(2) magnetic force
(3) electrostatic force
(4) muscular force

**38.** The angle between the _______ and the incident ray is called the angle of incidence.
(1) surface (2) normal
(3) tangent
(4) reflected ray

**39.** _______ are designed to read and interpret HTML.
(1) Browser
(2) Java Script
(3) SQL
(4) String

**40.** _______ is made by mixing iron with carbon and metals like chromium, nickel and manganese.
(1) Ship
(2) Stainless Steel
(3) Rust
(4) Ozone

**41.** The melting point of ice is ____ K.
(1) 253.16
(2) 263.16
(3) 273.16
(4) 283.16

**42.** ________ is any attribute of the organism (morphological, physiological, behavioural) that enables the organism to survive and reproduce in its habitat.
(1) Adaptation
(2) Migration
(3) Conformation
(4) Regulation

**43.** ______ scheme by the Central Government aims at providing free health checkups for pregnant women for the first 6 months of pregnancy.
(1) Gram Uday Se Bharat Uday Abhiyan
(2) Pradhan Mantri Ujjwala Yojana
(3) Pradhan Mantri Surakshit Matritva Abhiyan
(4) Vidyanjali Yojana

**44.** Who invented the thermos flask?
(1) Ray Tomlinson
(2) Tim Berners-Lee
(3) William Cullen
(4) James Dewar

**45.** How many medals in all did India win at the Rio Olympics 2016?
(1) 5 (2) 4
(3) 3 (4) 2

**46.** "Young Girls" is the famous work of which painter?
(1) Amrita Shergill
(2) M.F. Hussain
(3) F.N. Souza
(4) Jamini Roy

**47.** Captain Manoj Kumar Pandey was awarded the Paramvir Chakra for his martyrdom at which of the following wars?
(1) Indo-Pakistani War of 1965
(2) Indo-Pakistani War of 1971
(3) Kargil War of 1999
(4) Indo-China War of 1962

**48.** Which of the statements given below is/are not correct?
1. 'Open' is an Autobiography of Andre Agassi.

2. The author of 'India 2020: A Vision for the New Millennium' A.P.J. Abdul Kalam.
3. The author of 'A Foreign Policy For India' is L.K Advani.
(1) 3 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** A peace treaty between Japan and which country has not been concluded yet, even after 70 years have passed since the end of World War Two?
(1) India
(2) Russia
(3) China
(4) Canada

**50.** Nepal does not share its border with which Indian state?
(1) Uttarakhand
(2) Haryana
(3) West Bengal
(4) Sikkim

## QUANTITATIVE APTITUDE

**51.** What is the quotient when 1359 is divided by 48?
(1) 29 (2) 30
(3) 31 (4) 28

**52.** A can make a cupboard in 10 days and B can do it in 50 days. Along with C, they did the job in 6.25 days only. Then in how many days C alone can do the job?
(1) 20 days (2) 25 days
(3) 16 days (4) 15 days

**53.** What is the area (in $cm^2$) of a rectangle if its diagonal is 26 cm and one of its sides is 10 cm?
(1) 120 $cm^2$ (2) 240 $cm^2$
(3) 360 $cm^2$ (4) 480 $cm^2$

**54.** A shopkeeper marks up his wares by 80% and offers 20% discount. What will be the selling price (in Rs.) if the cost price is Rs. 450?
(1) Rs. 548 (2) Rs. 748
(3) Rs. 848 (4) Rs. 648

**55.** What number should be added to each of the numbers 35, 115, 53 and 165, so that the resulting numbers are in continued proportion?
(1) 10 (2) 12
(3) 8 (4) 6

**56.** A batsman makes a score of 95 runs in the 13th match and thus increases his average runs per match by 4. What is his average after the 13th match?
(1) 47 (2) 43
(3) 45 (4) 49

**57.** A vendor buys bananas at 12 for Rs 50 and sells at 5 for Rs 40. What will be the gain (in %)?
(1) 82% (2) 72%
(3) 92% (4) 62%

**58.** Two labourers A and B are paid a total of Rs. 750 per day. If A is paid 150 percent of what is paid to B, how much (in Rs) is B paid?
(1) Rs. 450 (2) Rs. 250
(3) Rs. 300 (4) Rs. 500

**59.** A man travelled a distance of 50 km in 8 hours. He travelled partly on foot at 5 km/hr and partly on bicycle at 7 km/hr. What is the distance (in km) travelled on foot?
(1) 20 km (2) 25 km
(3) 15 km (4) 30 km

**60.** The compound interest earned in two years at 8% per annum is Rs. 4160. What is the sum (in Rs.) invested?
(1) Rs. 24000 (2) Rs. 25000
(3) Rs. 30000 (4) Rs. 20000

**61.** If $\frac{1}{3}\left(\frac{12x}{5}-\frac{1}{2}\right)+\frac{6}{5}=\frac{7}{6}$, then what is the value of $x$?
(1) $\frac{1}{6}$ (2) $-\frac{1}{6}$
(3) $\frac{1}{5}$ (4) $-\frac{1}{5}$

**62.** If $a - b = 10$ and $ab = -21$, then what is the value of $a^3 - b^3$?
(1) 316 (2) 370
(3) 185 (4) 158

**63.** Sum of twice a fraction and 5 times its reciprocal is 7. What is the fraction?
(1) $\frac{2}{5}$ (2) $\frac{5}{4}$
(3) $\frac{5}{2}$ (4) $\frac{4}{5}$

**64.** The 3rd and 6th term of an arithmetic progression are 19 and 37 respectively. What is the 13th term?
(1) 79 (2) 43
(3) 45 (4) 49

**65.** What is the reflection of the point (5, –2) in the line $y = -1$?
(1) (–7 , –2 ) (2) (–5, 0)
(3) (5, 0) (4) (–7 , 2)

**66.** The co-ordinates of the centroid of a $\Delta ABC$ are (-1 , 4). What are the co-ordinates of vertex C if co-ordinates of A and B are (–3 , –1) and (3 , 5) respectively?
(1) (–3 , 8) (2) (3, 8)
(3) (–3 , –8) (4) (3 , –8)

**67.** $ax + 3y = 6$ has slope $-\frac{2}{3}$. What is the value of a?
(1) – 2 (2) 2
(3) 3 (4) – 3

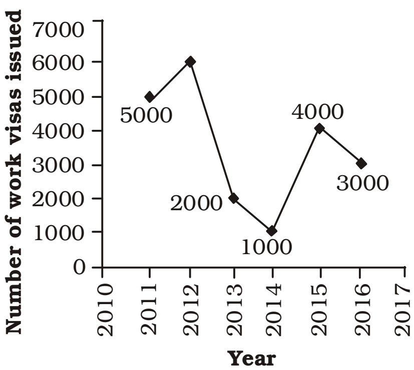
**68.** D and E are points on side AB and AC of $\Delta ABC$. DE is parallel to BC. If AD : DB = 2 : 3 and area of $\Delta ABC$ is 100 $cm^2$, what is the area (in $cm^2$) of quadrilateral BDEC?
(1) 84 $cm^2$ (2) 16 $cm^2$
(3) 25 $cm^2$ (4) 75 $cm^2$

**69.** What is the value of sin 30° + 2 cos 30° ?
(1) $\frac{(2\sqrt{2}+3)}{\sqrt{6}}$ (2) $\frac{(9+2\sqrt{3})}{9}$
(3) $\frac{(2\sqrt{2}+3)}{2}$ (4) $\frac{(2\sqrt{6}+1)}{\sqrt{3}}$

**70.** $\Delta XYZ$ is right angled at Y. If $m\angle Z = 60°$, what is the length of YZ (in cm), if ZX = $3\sqrt{3}$ cm ?
(1) $\frac{3\sqrt{3}}{2}$ cm (2) $3\sqrt{3}$ cm
(3) 9 cm (4) 6 cm

**71.** If sec θ $\frac{13}{12}$, then cot θ = ?
(1) $\frac{12}{5}$ (2) $\frac{13}{5}$
(3) $\frac{5}{13}$ (4) $\frac{5}{12}$

**Directions (72–75) :** The line graph shows the number of work visas issued by a country in each year from 2011 to 2016. Study the diagram and answer the following questions.




**72.** Number of work visas issued were more than those issued in the previous years in how many years?
(1) 1 (2) 3
(3) 4 (4) 2

**73.** Number of work visas issued in 2016 were lower (in %) than the previous year by?
(1) 20% (2) 100%
(3) 50% (4) 25%

**74.** What is the total number of visas issued from 2012 to 2015 ?
(1) 13000 (2) 18000
(3) 16000 (4) 7000

**75.** If 10% of people who are issued work visas do not use the visas then how many people from 2011 to 2016 have used the visas?
(1) 19800 (2) 17800
(3) 18700 (4) 18900

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** It seemed as if (1)/ every man in the (2)/ country was back them. (3)/No Error (4)

**77.** He put the birds softly, (1)/ one by one, interior their (2)/ warm little home. (3)/No Error (4)

**Directions (78–79) :** In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

**78.** We feared the enemies attack because they ________ everything in their path.
(1) satiate
(2) quench
(3) remedy
(4) incinerate

**79.** The president's coterie of advisers was unable to offer him a ___________ to the national problem.
(1) solvent
(2) solute
(3) solution
(4) mixture

**Directions (80–81) :** In the following question, out of the four alternatives, select the word similar in meaning to the word given.

**80. Redundancy**
(1) Absence
(2) Dearth
(3) Paucity
(4) Excess

**81. Inhibitor**
(1) Advocate
(2) Subsidy
(3) Avoidance
(4) Compensation

**Directions (82–83) :** In the following question, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Bifurcate**
(1) Combine
(2) Ramify (3) Furcate
(4) Diverge

**83. Dissension**
(1) Bickering
(2) Controversy
(3) Strife
(4) Harmony

**Directions (84–85) :** In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. Get up on the wrong side of the bed**
(1) Make a wrong decision and regret it for the rest of the life
(2) Start the day in a bad mood, which continues all day long
(3) Have a sleepless night especially due to worries
(4) Suffer an uncomfortable stay at an unfamiliar place

**85. Learn by heart**
(1) To memorize something
(2) Love something terribly
(3) Learn a lesson by making a mistake
(4) Learn to control or hide your true feelings

**Directions (86–87) :** In the following question, out of the four alternatives, select the alternative which will improve the bracketed and bold part of the sentence. In case no improvement is needed, select "no improvement".

**86.** She **(starts walks)** without responding.
(1) start walking
(2) started walking
(3) starting walking
(4) No improvement

**87.** He must **(being)** overwhelmed with the responsibility.
(1) been
(2) has been
(3) have been
(4) No improvement

**Directions (88–89) :** In the following question, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. The quality of being particularly noticeable**
(1) Salience
(2) Frivolous
(3) Immaterial
(4) Trivial

**89. Of a disease or poison extremely severe or harmful in its effects**
(1) Innocuous
(2) Virulent
(3) Naive
(4) Inoffensive

**Directions (90–91) :** In the following question, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) Analoges
(2) Analogese
(3) Analogues
(4) Analoguese

**91.** (1) Unraffled
(2) Unruffled
(3) Unrufled
(4) Unrafled

**Directions (92–93) :** These question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. It was three o'clock in the afternoon**
X. find our bearers
Y. before we woke, to
Z. preparing to return
(1) YXZ (2) XZY
(3) XYZ (4) ZYX

**93. Now the first and most**
X. strata of marine origin occur above the
Y. simple appearance is where
Z. level of the sea in horizontal position
(1) XZY (2) YXZ
(3) XYZ (4) ZYX

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**My daughter read the entire novel in one day.**
(1) The entire novel is read by my daughter in one day.
(2) In one day my daughter read the entire novel.
(3) The entire novel was read by my daughter in one day.
(4) In one day my daughter has read the entire novel.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**The coach said to the child, "Don't make the water muddy."**
(1) The co ach commanded the child don't make the water dirty.
(2) The coach commanded to the child not to make the water dirty.
(3) The coach commanded the child not to make the water dirty.
(4) The coach commanded to the child don't make the water dirty .

**Directions (96–100) :** A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

The instructor's rules were simple. Breathe through your mouth, not your nose; else the mask will fog up. Easier said than done; I got it wrong many a time. But once you fought habit and got the hang of it, the panoramic underwater world revealed itself to you with high-definition clarity.

Led by him, I slowly peered through the mask into what till then was crystal-clear water, shimmering in the sunlight. I saw pebbles, sand and my fluid shadow. I was in Nemo's universe. Sea cucumbers, sea anemone, clown fish, star fish, sea horses, parrot fish, butterfly fish and a bevy of colourful salt water fish swam past. A shoal of canary-yellow fish did a merry dance and another with vibrant blue fish followed it. They were oblivious to the snorkelers who struggled to take in the sight of a world so beautiful, so colourful, and resist opening their mouth wide in amazement; the tube would fall off!

**96.** The writer is describing her experience of which activity?
(1) fishing
(2) snorkelling
(3) boat ride
(4) long distance swimming

**97.** How to avoid the mask fogging up ?
(1) By breathing through the nose and exhaling through the mouth
(2) By breathing through the mouth
(3) By keeping one's head under water
(4) By looking downwards

**98.** What is 'Nemo'?
(1) A name of an under water animal
(2) Name of the writer
(3) Name of the instructor
(4) Name of a type of sea cucumber

**99.** The writer saw all of the following except:
(1) canary–yellow fish
(2) sea horses
(3) parrot fish
(4) Vibrant green fish

**100.** When would there be a risk of the tube falling off ?
(1) When the mask fogged up
(2) When one took breathed through the nose
(3) When it became dark
(4) When the mouth was opened

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (2) | **3.** (3) | **4.** (2) |
| **5.** (3) | **6.** (3) | **7.** (2) | **8.** (3) |
| **9.** (3) | **10.** (1) | **11.** (1) | **12.** (2) |
| **13.** (3) | **14.** (4) | **15.** (3) | **16.** (1) |
| **17.** (3) | **18.** (1) | **19.** (3) | **20.** (1) |
| **21.** (1) | **22.** (1) | **23.** (1) | **24.** (1) |
| **25.** (2) | **26.** (4) | **27.** (4) | **28.** (4) |
| **29.** (1) | **30.** (4) | **31.** (2) | **32.** (4) |
| **33.** (4) | **34.** (3) | **35.** (2) | **36.** (2) |
| **37.** (1) | **38.** (2) | **39.** (1) | **40.** (2) |
| **41.** (3) | **42.** (1) | **43.** (3) | **44.** (4) |
| **45.** (4) | **46.** (1) | **47.** (3) | **48.** (1) |
| **49.** (2) | **50.** (2) | **51.** (4) | **52.** (2) |
| **53.** (2) | **54.** (4) | **55.** (1) | **56.** (1) |
| **57.** (3) | **58.** (3) | **59.** (3) | **60.** (2) |
| **61.** (1) | **62.** (2) | **63.** (3) | **64.** (1) |
| **65.** (3) | **66.** (1) | **67.** (2) | **68.** (1) |
| **69.** (3) | **70.** (1) | **71.** (1) | **72.** (4) |
| **73.** (4) | **74.** (1) | **75.** (4) | **76.** (3) |
| **77.** (2) | **78.** (4) | **79.** (3) | **80.** (4) |
| **81.** (1) | **82.** (1) | **83.** (4) | **84.** (2) |
| **85.** (1) | **86.** (2) | **87.** (3) | **88.** (1) |
| **89.** (2) | **90.** (3) | **91.** (2) | **92.** (1) |
| **93.** (2) | **94.** (3) | **95.** (3) | **96.** (2) |
| **97.** (2) | **98.** (1) | **99.** (4) | **100.** (4) |

SET 43

## SOLVED PAPER

# SSC CGL TIER-I (CBE) EXAM

**Held on : 23.08.2017 (Shift-III)**

## GENERAL INTELLIGENCE

**1.** Select the related word from the given alternatives :
Car: Steering wheel:: Motorcycle: ?
(1) Tyre
(2) Headlight
(3) Engine
(4) Handle bar

**2.** Select the related letters from the given alternatives :
EFG : VUT :: JIH : ?
(1) SUW (2) QRS
(3) QSU (4) HFD

**3.** Select the related number from the given alternatives :

$0.02 : 0.002 :: \frac{1}{3} : ?$

(1) 0.333 (2) $\frac{1}{30}$
(3) 0.003 (4) 3

**4.** Select the odd word from the given alternatives :
(1) Bat (2) Umpire
(3) Stumps (4) Bails

**5.** Select the odd letters from the given alternatives :
(1) ECA (2) GIK
(3) QOM (4) WUS

**6.** Select the odd number from the given alternatives :
(1) 133 (2) 253
(3) 231 (4) 209

**7.** A series is given, with one word missing. Choose the correct alternative from the given ones that will complete the series.
rupees, arena, pursue, spare, separate, ?
(1) rapid (2) pusher
(3) person (4) super

**8.** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series :
U, T, R, O, K, ?
(1) G (2) H
(3) E (4) F

**9.** A series is given, with one number missing. Choose the correct alternative from the given ones that will complete the series :
–7.25, –5.75, –4.25, –2.75, ? , 0.25
(1) 1.25 (2) –1.25
(3) 1.5 (4) –1.5

**10.** Aarush's birthday is on Thursday 27th April. On what day of the week will be Mitul's birthday in the same year if Mitul was born on 28th September?
(1) Monday
(2) Thursday
(3) Wednesday
(4) Tuesday

**11.** The weights of 4 boxes are 20, 30, 40 and 60 kilograms. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 150 (2) 110
(3) 130 (4) 140

**12.** From the given words, select the word which cannot be formed using the letters of the given word.
**HUMBLING**
(1) BLUE (2) NUMB
(3) LUNG (4) GLUM

**13.** If FOREIGN is coded as ULIVRTM, then how will SAP be coded as?
(1) NOL (2) PLQ
(3) GYP (4) HZK

**14.** In a certain code language,'+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
25 + 10 ÷ 240 × 16 = ?
(1) 85 (2) 235
(3) 12 (4) 20

**15.** If 9 # 3 = 6; 15 # 3 = 9; 60 # 4 = 32; then what is the value of 27 # 3 = ?
(1) 24 (2) 15
(3) 13 (4) 33

**16.** Select the missing number from the given responses

| 91 | 299 | 493 |
|---|---|---|
| ? | 23 | 29 |
| 7 | 13 | 17 |

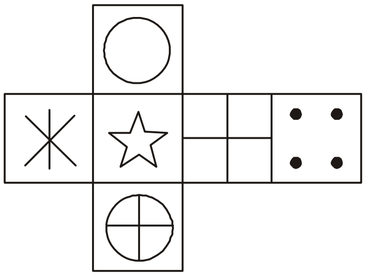
(1) 13 (2) 17
(3) 84 (4) 98

**17.** Priya cycles 5 km North, then turns East and cycles 4 km, then turns South and cycles 5 km, then turns to her right and cycles 6 km. Where is she now with reference to her starting position?
(1) 2 km East
(2) 2 km West
(3) 10 km West
(4) 10 km East

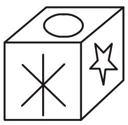
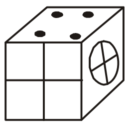
**18.** In this question two statements are given, followed by two Conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given Conclusions, if any, follows from the given statements.
**Statements :**
No square is rectangle.
All rectangles are triangles.
**Conclusions :**
I. Some triangles are squares.
II. Some triangles are rectangles.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both I and II follow
(4) Neither I nor II follows

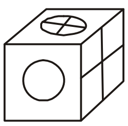
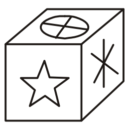
**19.** Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

**Question Figure :**

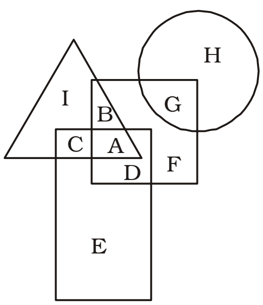


**Answer Figures :**

(1)  (2) 

(3)  (4) 

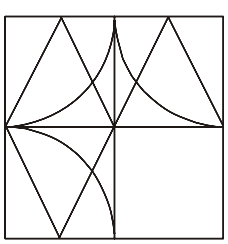
**20.** In the following figure, square represents Teachers, triangle represents Swimmers, circle represents Nurses and rectangle represents Women, Which set of letters represents Teachers who are either Swimmers or Nurses?



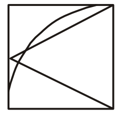
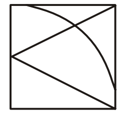

(1) D, F
(2) A, B, D, F, G
(3) A, B, G
(4) I, C, H

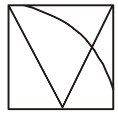
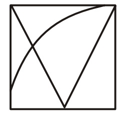
**21.** Which answer figure will complete the pattern in the question figure?

**Question Figure :**



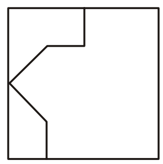
**Answer Figures :**

(1)  (2) 

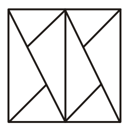
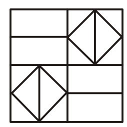
(3)  (4) 

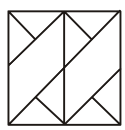
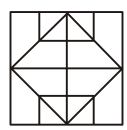
**22.** From the given answer figures, select the one in which the question figure is hidden/embedded.

**Question Figure :**



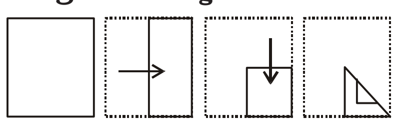
**Answer Figures :**

(1)  (2) 

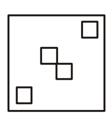
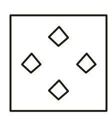
(3)  (4) 

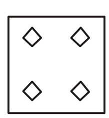
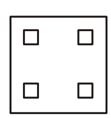
**23.** A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

**Question Figures :**



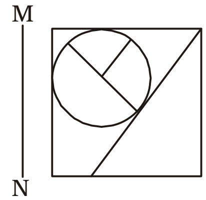
**Answer Figures :**

(1)  (2) 

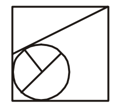
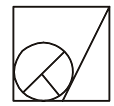
(3)  (4) 

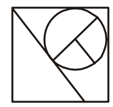
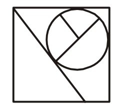
**24.** If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

**Question Figure :**




**Answer Figures :**

(1)  (2) 

(3)  (4) 

**25.** A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabet as shown in the given two matrices, The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 42, 33 etc and 'T' can be represented by 56, 67 etc. Similarly, you have to identify the set for the word **'NOTE'**.

**Matrix-I**

| | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 0 | C | K | K | M | H |
| 1 | A | I | B | M | G |
| 2 | D | J | E | D | L |
| 3 | L | H | M | K | I |
| 4 | F | C | K | L | J |

**Matrix-II**

| | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| 5 | V | Z | Q | U | W |
| 6 | Y | S | Z | S | W |
| 7 | T | X | V | O | R |
| 8 | W | X | Q | T | X |
| 9 | Y | S | S | T | N |

(1) 04, 30, 85, 66
(2) 20, 40, 75, 69
(3) 40, 21, 69, 55
(4) 99, 78, 75, 22

## GENERAL AWARENESS

**26.** The marginal product curve is inverse ________ shaped.
(1) X (2) W
(3) V (4) U

**27.** Goods which are consumed together are called?
(1) Inferior goods
(2) Normal goods
(3) Complementary goods
(4) Substitute goods

**28.** "Public health and sanitation; hospitals and dispensaries" is listed in the _______ list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

**29.** _______ elects the President and the Vice President and removes judges of Supreme Court and High Court.
(1) Ministry of Defence
(2) LokSabha
(3) Prime Minister's Office
(4) Securities and Exchange Board of India

**30.** According to the categories of land mentioned in the Chola inscriptions _________ was known as the land gifted to Brahmanas?
(1) Vellanvagai
(2) Brahmadeya
(3) Shalabhoga
(4) Devadana

**31.** Prithviraja III (1168-1192) was a best known _______ ruler.
(1) Chahamana
(2) Gahadavala
(3) Chalukya
(4) Brahmana

**32.** _______ is the wearing away of the landscape by different agents like water, wind and ice.
(1) Weathering
(2) Attrition
(3) Erosion
(4) Abrasion

**33.** The method of soil conservation in which bare ground between plants is covered with layer of organic matter like straw is called?
(1) Mulching
(2) Contour barriers
(3) Rock dam
(4) Terrace farming

**34.** Classes comprising animals like fishes, amphibians, reptiles, birds along with mammals constitute the category called?
(1) Species
(2) Genus
(3) Kingdom
(4) Phylum

**35.** The predominant stage of the life cycle of a moss is the gametophyte which consists of two stages. The first stage is the________ stage.
(1) Agar (2) Leafy
(3) Chlorella (4) protonema

**36.** _______ is the largest phylum of Animalia which includes insects.
(1) Annelida
(2) Chordata
(3) Arthropoda
(4) Platyhelminthes

**37.** For an object, the state of rest is considered to be the state o ________ speed.
(1) increasing
(2) decreasing
(3) inverse
(4) zero

**38.** The laws which govern the motion of planets are called _________.
(1) Newton's Laws
(2) Kepler's Laws
(3) Avogadro's Laws
(4) De Morgan's Laws

**39.** In Microsoft Word, _________ allows us to change the color of selected text.
(1) Font Color
(2) Text Color
(3) Change Color
(4) Background Color

**40.** Brownish film formed on iron when left in open is called?
(1) Dust (2) Shovel
(3) Spade (4) Rust

**41.** The substances which have very low ignition temperature and can easily catch fire with a flame are called _________ substances.
(1) hazardous
(2) perilous
(3) incombustible
(4) inflammable

**42.** Many freshwater animals cannot live for long in sea water and vice versa because of the _______ problems, they would face.
(1) Osmotic
(2) Eurythermal
(3) Stenothermal
(4) Hydrothermal

**43.** _______ scheme has been introduced by the Central Government to provide equal primary education to all budding children across India.
(1) Gram Uday Se Bharat Uday Abhiyan
(2) Pradhan Mantri Ujjwala Yojana
(3) Pradhan Mantri Surakshit Matritva Yojana
(4) Vidyanjali Yojana

**44.** Who discovered Insulin?
(1) Sir Alexander Fleming
(2) Frederic Bantig
(3) James Watt
(4) Sir F.G. Hopkins

**45.** Which ation will host the Summer Olympics in the year 2020?
(1) China (2) South Korea
(3) Canada (4) Japan

**46.** Dhamek Stupa was built by ?
(1) Akbar (2) Humayun
(3) Ashoka (4) Narasimha

**47.** Which of the following is India's highest award inn cinema given anually by the Government of Idia for lifetime contribution to Indian ciema?
(1) Ashok Chakra orated
(2) Dada Saheb Phalke Awards
(3) Arjuna Award
(4) Padma Shri

**48.** Which of the statements given below are correct?
1. The author of the novel Air is Geoff Ryman.
2. The author of the novel 'Ulysses' is James Joyce.
3. The author of the novel 'The Great Gatsby' is F. Scott Fitzgerald.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

**49.** In 2016, which company lost high profile legal battles with HP and Google?
(1) Oracle (2) Apple
(3) Microsoft (4) Intel

**50.** Which of the following is a major river in Bangladesh which is also the main distributary of the Ganges?
(1) Gandak (2) Kosi
(3) Gomati (4) Padma

## QUANTITATIVE APTITUDE

**51.** What least number must be subtracted from 518, so that the resulting number is completely divisible by 13?
(1) 11 (2) 10
(3) 9 (4) 12

**52.** A and B together can do a job in 12 days and A could do the job in 20 days if he worked alone. How many days would B take to do the job if he work alone?
(1) 30 (2) 25
(3) 24 (4) 15

**53.** What is the area (in sq. cm.) of a regular hexagon of side 9 cm?
(1) $50\sqrt{3}$ (2) $300\sqrt{3}$
(3) $\frac{243\sqrt{3}}{2}$ (4) $200\sqrt{3}$

**54.** If 1 shirt is offered free on purchase of 4 shirts, what is the effective discount (in %) on each shirt?
(1) 25 (2) 20
(3) 16 (4) 24

**55.** The ratio of present ages of P and Q is 7 : 9. 10 years ago the ratio of their ages was 5 : 7. What is Q's present age (in years)?
(1) 35 (2) 45
(3) 25 (4) 55

**56.** The average marks of 40 students in an examination was 34. It was later found that the marks of one student had been wrongly entered as 62 instead of 26. what is the correct average?
(1) 33.1 (2) 33.3
(3) 33.5 (4) 33.7

**57.** A wholesaler sells goods to a retailer at a profit of 5% and the retailer sells it to a customer at a profit of 10%. If the customer pays Rs. 2,000, what had it cost (in Rs.) the wholesaler?
(1) 1731.6 (2) 3210.6
(3) 1931.6 (4) 2310.6

**58.** When a number is increased by 69, it becomes 103% of itself. What is the number?
(1) 1300 (2) 3300
(3) 2300 (4) 4300

**59.** A boat goes a certain distance at 40 km/hr and comes back the same distance at 24 km/hr. What is the average speed (in km/hr) for the total journey?
(1) 32 (2) 28
(3) 34 (4) 30

**60.** A sum fetched a total simple interest of Rs.5,400 at the rate of 12.5 % per annum in 4 years. What is the sum (in Rs.)?
(1)11800 (2) 12800
(3) 9800 (4) 10800

**61.** If $\frac{2}{3}\left(\frac{6x}{5}-\frac{1}{4}\right)+\frac{1}{3}=\frac{9x}{5}$, then what is the value of $x$?
(1) $\frac{1}{6}$ (2) $-\frac{1}{6}$
(3) $\frac{1}{5}$ (4) $-\frac{1}{5}$

**62.** If $a^3 + b^3 = 341$ and ab = 30, then what is the value of $(a + b)$ ?
(1) 1 (2) 9
(3) 7 (4) 11

**63.** The sum of a fraction and thrice its reciprocal is $\frac{31}{6}$. What is the fraction?
(1) $\frac{2}{9}$ (2) $\frac{9}{4}$
(3) $\frac{9}{2}$ (4) $\frac{4}{9}$

**64.** What is the sum of the first 13 terms of an arithmetic progression if the 5th term is 1 and the 8th term is –17?
(1) –140 (2) 61
(3) –143 (4) 166

**65.** What is the reflection of the point (–4, 3) in the line $x = -2$?
(1) (–4. –7) (2) (4, 3)
(3) (0, 3) (4) (–4, 7)

**66.** Point A divides segment BC in the ratio 5 : 1. The co-ordinates of B are (6, –4) and that C are (0, 8). What are the co-ordinates of point A?
(1) (–1, 6) (2) (1, –6)
(3) (–1, –6) (4) (1, 6)

**67.** What is the slope of the line parallel to the line passing through the points (3, –4) and (–2, 5)?
(1) $\frac{9}{5}$ (2) $-\frac{5}{9}$
(3) $-\frac{9}{5}$ (4) $\frac{5}{9}$

**68.** ΔXYZ is similar to ΔPQR. If ratio of the perimeter of ΔXYZ and the perimeter of ΔPQR is 4 : 9 and PQ = 27 cm, then what is the length of XY (in cm.) ?
(1) 9 (2) 12
(3) 16 (4) 15

**69.** What is the value of cot 45° + $\frac{1}{3}$ cosec 60°?
(1) $\sqrt{3}+2$ (2) $\frac{\left(9+2\sqrt{3}\right)}{9}$
(3) $\sqrt{3}$ (4) $\frac{\left(2\sqrt{2}+3\right)}{\sqrt{6}}$

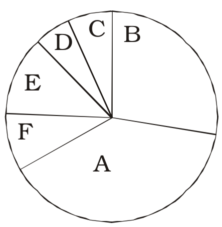
**70.** ΔDEF is right angled at E. If $m\angle F$ = 45°, then what is the value of sin F × tan F?
(1) $\sqrt{2}$ (2) $\frac{1}{\sqrt{3}}$
(3) $\frac{1}{\sqrt{2}}$ (4) $\frac{2}{\sqrt{3}}$

**71.** If $\cot\theta = \frac{21}{20}$, then what is the value of sec θ?

(1) $\frac{29}{21}$ (2) $\frac{21}{29}$

(3) $\frac{29}{20}$ (4) $\frac{20}{29}$

**Directions (72–75) :** A survey was conducted to find what genre of movies people liked the most. 1200 people answered the survey. The pie chart shows the results of that survey. The numbers in the pie chart are the ratios. Study the diagram and answer the following questions.




A. Comedy, 35
B. Action, 25
C. Historical, 6
D. Fiction, 5
E. Dram, 11
F. Romance, 08

**72.** Which two genres of movies were liked the least?
(1) Fiction and Historical
(2) Fiction and Drama
(3) Drama and Historical
(4) Drama and Romance

**73.** How many surveyed said they liked Historical movies?
(1) 6 (2) 72
(3) 80 (4) 60

**74.** How many more people surveyed like Drama movies than those who like Romance movies?
(1) 3 (2) 36
(3) 40 (4) 30

**75.** 24% people who were mailed the survey questionnaire answered the survey. The survey questionnaire was mailed to how many people?
(1) 5000 (2) 10000
(3) 1200 (4) 288

## ENGLISH COMPREHENSION

**Directions (76–77) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

**76.** The lady was knocked down (1)/by a speeding car (2)/upon crossing the road.(3)/No Error (4)

**77.** Grandfather led (1)/a peaceful life after his (2)/retirement from the army. (3)/No Error (4)

**Directions (78–79) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**78.** Since my father was an _______ from India, he brought his Indian culture and traditions to the United States with him.
(1) emigrant (2) immigrant
(3) native (4) citizen

**79.** At night, the winding roads can make driving up the mountain a _______ journey.
(1) carefree
(2) beastly
(3) obnoxious
(4) treacherous

**Directions (80–81) :** In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

**80. Stupor**
(1) Sensibility
(2) Slumber
(3) Liveliness
(4) Consciousness

**81. Subtle**
(1) Harsh (2) Open
(3) Ignorant (4) Understated

**Directions (82–83) :** In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

**82. Sullen**
(1) Glum (2) Silent
(3) Crabby (4) Agreeable

**83. Summon**
(1) Dismiss (2) Draft
(3) Invite (4) Mobilise

**Directions (84–85) :** In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

**84. At the drop of a hat**
(1) Without any hesitation; instantly.
(2) Show outward respect to someone you hate.
(3) Forcibly let go of something which is very personal to you.
(4) A mistake which is of not much consequence.

**85. Beat a dead horse**
(1) Show extreme level of cruelty especially to animals.
(2) Exploit someone to the point of killing him/her.
(3) To uselessly dwell on a subject far beyond its point of resolution.
(4) To continue playing a game knowing very well that you are going to lose.

**Directions (86–87) :** Improve the bracketed part of the sentences.

**86.** I gave up **(drinks)** many years ago.
(1) to drink
(3) drinking
(4) No improvement

**87.** Rahul went out without **(saying)** good bye.
(1) say even
(2) even said
(3) say
(4) No improvement

**Directions (88–89) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

**88. A person or thing that is likely to cause harm**
(1) Menace (2) Cordial
(3) Festal (4) Blithe

**89. Having or involving an extreme or irrational fear of or aversion to something.**
(1) Valiant (2) Stout
(3) Phobic (4) Foolhardy

**Directions (90–91) :** In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

**90.** (1) bereaving
(2) bereaveing
(3) bereving
(4) bireaving

**91.** (1) deligence
(2) diligence
(3) delegence
(4) dilegence

**Directions (92–93) :** The questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

**92. I've taken out my**
X. and stay poised and vigilant
Y. ear buds so I can
Z. listen for announcements
(1) ZXY (2) YZX
(3) XZY (4) YXZ

**93. In the Northeast, the sun**
X. sets by four in the evening
Y. morning and in winter it
Z. rises as early as four in the
(1) XYZ (2) YZX
(3) ZYX (4) ZXY

**94.** In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**The majestic Asiatic lions roam the sanctuary.**
(1) The Asiatic lions which are majestic roamed the sanctuary.
(2) The sanctuary is the place where the majestic Asiatic lions roam.
(3) The sanctuary is roamed by majestic Asiatic lions.
(4) The majestic Asiatic lions have been roaming the sanctuary.

**95.** In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

**"How old is your grandmother?", Navneet asked her.**
(1) Navneet asked her how old her grandmother is.
(2) Navneet asked her how old her grandmother has been.
(3) Navneet asked her how old her grandmother was.
(4) Navneet asked her how old is her grandmother.

**Directions (96–100) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The promise of nuclear power has so **(96)** outweighed all of these concerns, and India has reason to be proud of its technology and determination to look for non-fossil **(97)** in its energy planning. However, **(98)** rapid progress in technology in other **(99)** energy sources such as wind and solar power, the collapse of oil prices and the expansion in gas projects as a viable and clean alternative, that promise **(100)**.

**96.** (1) far (2) less
(3) near (4) closely

**97.** (1) compulsions
(2) obligations
(3) alternatives
(4) constraints

**98.** (1) to
(2) from
(3) with
(4) for

**99.** (1) brief
(2) renewable
(3) untenable
(4) temporary

**100.** (1) to dim
(2) dimming
(3) was dim
(4) has dimmed

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (4) | **2.** (2) | **3.** (2) | **4.** (2) |
| **5.** (2) | **6.** (1) | **7.** (2) | **8.** (4) |
| **9.** (2) | **10.** (2) | **11.** (4) | **12.** (1) |
| **13.** (4) | **14.** (2) | **15.** (2) | **16.** (1) |
| **17.** (2) | **18.** (2) | **19.** (3) | **20.** (3) |
| **21.** (4) | **22.** (4) | **23.** (4) | **24.** (4) |
| **25.** (4) | **26.** (4) | **27.** (3) | **28.** (2) |
| **29.** (2) | **30.** (2) | **31.** (1) | **32.** (3) |
| **33.** (1) | **34.** (4) | **35.** (4) | **36.** (3) |
| **37.** (4) | **38.** (2) | **39.** (1) | **40.** (4) |
| **41.** (4) | **42.** (1) | **43.** (4) | **44.** (2) |
| **45.** (4) | **46.** (3) | **47.** (2) | **48.** (4) |
| **49.** (1) | **50.** (4) | **51.** (1) | **52.** (1) |
| **53.** (3) | **54.** (2) | **55.** (2) | **56.** (1) |
| **57.** (1) | **58.** (3) | **59.** (4) | **60.** (4) |
| **61.** (1) | **62.** (4) | **63.** (3) | **64.** (3) |
| **65.** (3) | **66.** (4) | **67.** (3) | **68.** (2) |
| **69.** (2) | **70.** (3) | **71.** (1) | **72.** (1) |
| **73.** (3) | **74.** (3) | **75.** (1) | **76.** (3) |
| **77.** (4) | **78.** (2) | **79.** (4) | **80.** (2) |
| **81.** (4) | **82.** (4) | **83.** (1) | **84.** (1) |
| **85.** (3) | **86.** (3) | **87.** (4) | **88.** (1) |
| **89.** (3) | **90.** (1) | **91.** (2) | **92.** (2) |
| **93.** (3) | **94.** (3) | **95.** (3) | **96.** (1) |
| **97.** (3) | **98.** (3) | **99.** (2) | **100.** (4) |

## EXPLANATIONS

**1.** (4) Steering wheel is used to control the direction and movement of a car and other vehicles. Similarly, handle bar is used to control the direction of motorcycle.

**2.** (2)

E F G : V U T : : J I H : Q R S

Pairs of opposite letters.

**3.** (2) $0.02 : 0.002 :: \frac{1}{3} : \frac{1}{30}$

$\times\frac{1}{10}$ $\times\frac{1}{10}$

**4.** (2) All the four terms are associated with the game of cricket. But, Stumps, Bails and Balls are articles used in the game of cricket while umpire regulates the game of cricket.

**5.** (2) E $\xrightarrow{-2}$ C $\xrightarrow{-2}$ A

Q $\xrightarrow{-2}$ O $\xrightarrow{-2}$ M

W $\xrightarrow{-2}$ U $\xrightarrow{-2}$ S

But,

G $\xrightarrow{+2}$ I $\xrightarrow{+2}$ K

**6.** (1) 19 × 7 = 133
11 × 23 = 253
11 × 21 = 231
11 × 19 = 209
Except the number '133' all other numbers are divisible by '11'.

**7.** (2) In each next term the position of '*r*' shifts one place to the right.

**8.** (4) U $\xrightarrow{-1}$ T $\xrightarrow{-2}$ R $\xrightarrow{-3}$ O $\xrightarrow{-4}$ K $\xrightarrow{-5}$ [F]

**9.** (2) –7.25 + 1.5 = –5.75
–5.75 + 1.5 = –4.25
–4.25 + 1.5 = –2.75
–2.75 + 1.5 = –1.25
–1.25 + 1.5 = 0.25

**10.** (2) 27th April = Thursday
Number of days from 27th April to 28th September
= 3 + 31 + 30 + 31 + 31 + 28
= 154 days = 22 weeks
∴ 28th September = Thursday

**11.** (4) Possible weights of combinations of boxes in kilograms :
(i) 20 + 30 = 50
(ii) 20 + 40 = 60
(iii) 20 + 60 = 80
(iv) 30 + 40 = 70
(v) 30 + 60 = 90
(vi) 40 + 60 = 100
(vii) 20 + 30 + 40 = 90
(viii) 20 + 30 + 60 = 110
(ix) 20 + 40 + 60 = 120
(x) 30 + 40 + 60 = 130
(xi) 20 + 30 + 40 + 60 = 150

**12.** (1) There is no 'E' letter in the given word. Therefore, the word BLUE cannot be formed.

H [U M B] L I [N] G
⇒ NUMB

H [U] M B [L] I [N G]
⇒ LUNG

H [U M] B [L] I N [G]
⇒ GLUM

**13.** (4)

| F | O | R | E | I | G | N |
|---|---|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| U | L | I | V | R | T | M |

Pairs of opposite letters.
Therefore,

| S | A | P |
|---|---|---|
| ↓ | ↓ | ↓ |
| H | Z | K |

**14.** (2)

| + ⇒ × | – ⇒ + |
|---|---|
| × ⇒ ÷ | ÷ ⇒ – |

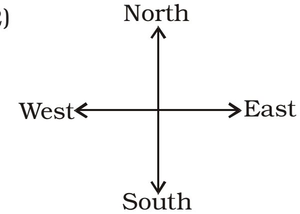
25 + 10 ÷ 240 × 16 = ?
⇒ ? = 25 × 10 – 240 ÷ 16
⇒ ? = 250 – 15 = 235

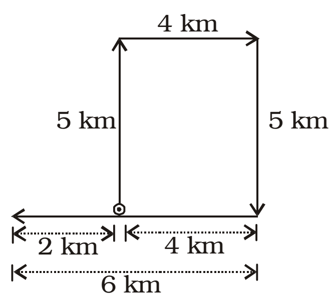
**15.** (2) 9 # 3 = (9 + 3) ÷ 2
= 12 ÷ 2 = 6
15 # 3 = (15 + 3) ÷ 2
= 18 ÷ 2 = 9
60 # 4 = (60 + 4) ÷ 2
= 64 ÷ 2 = 32
Therefore,
27 # 3 = (27 + 3) ÷ 2
= 30 ÷ 2 = 15

**16.** (1) Second Column
23 × 13 = 299
Third Column
29 × 17 = 493
First Column
? × 7 = 91

$\Rightarrow ? = \frac{91}{7} = 13$

**17.** (2)



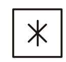
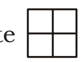

Now, Priya is 2 km west of her starting position.

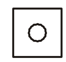
**18.** (2) First Premise is Universal Negative (E–type).
Second Premise is Universal Affirmative (A–type).

No square is rectangle.
↗↙
All rectangles are triangles.

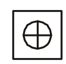
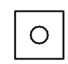
E + A ⇒ $O_1$–type of Conclusion "Some triangles are not squares."
Conclusion II is the Converse of the second Premise.

**19.** (3) After folding the figure :

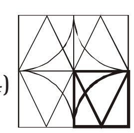
 lies opposite .

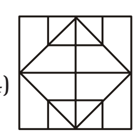
 lies opposite .

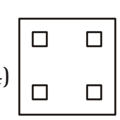
lies opposite .

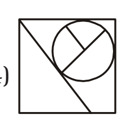
 cannot be on the face adjacent to . Therefore, the cube given in the option (3) cannot be formed.

**20.** (3) Teachers who are Swimmers can be represented by letters present in the square and the triangle. Such letters are A and B. Teachers who are Nurses can be represented by letters present in the square and the circle. Such letter is G.

**21.** (4) 

**22.** (4) 

**23.** (4) 

**24.** (4) 

**25.** (4) N = 99
O = 78
T = 75, 88, 98
E = 22

| Option | N | O | T | E |
|---|---|---|---|---|
| (1) | 04 | 03 | 85 | 66 |
| (2) | 20 | 40 | 75 | 69 |
| (3) | 40 | 21 | 69 | 55 |
| (4) | 99 | 78 | 75 | 22 |

**26.** (4) Marginal product of a factor is the addition to the total production by the employment of an extra unit of a factor. It has been found that marginal product of a factor rises in the beginning and then ultimately falls as more of it is used for production, other factors remaining the same. The marginal product curve is inverted-U-shaped.

**27.** (3) Complementary goods are goods that are usually consumed together or that have the ability to provide a higher utility when consumed together. When two goods are complementary, the demand for one generates a demand for the second one. Examples of complementary goods include printers and ink cartridges, tea and sugar, cars and petrol, mobile phones and SIM cards, hardware and software, etc.

**28.** (2) Under the Indian Constitution, the items of public health, sanitation, hospitals and dispensaries fall in the State List. The State List or List-II is a list of 61 items (Initially there were 66 items in the list) in Schedule Seven to the Constitution of India.

**29.** (2) The House of the People is popularly known as the Lok Sabha. It is the lower and powerful house of the Union Parliament directly elected by all the people. The elected members of the Lok Sabha take part in the election of the President. Members of the Lok Sabha and the Rajya Sabha together elect the Vice-President of India. The Lok Sabha and the Rajya Sabha can together pass a resolution for the removal of any judge of the Supreme Court or of a State High Court.

**30.** (2) According to Chola inscriptions, there were five types of 'land gifts' that Chola kings gave to their people :

- vellanvagai was land for non-Brahmana, peasant proprietors
- brahmadeya was land gifted to Brahmanas

**31.** (1) Prithviraja III was Rajput warrior king of the Chauhan (Chahamana) clan of rulers who established the strongest kingdom in Rajasthan. Prithviraja's defeat in 1192 in the second battle of Taraori (Tarain) at the hands of the Muhammad Ghori marked a watershed in medieval history of India.

**32.** (3) Erosion involves the wearing away of rock and soil found along the river bed and banks. Erosion also involves the breaking down of the rock particles being carried downstream by the river. The four forces of erosion are water, wind, glaciers, and gravity. Moving water is the most important natural erosional agent.

**33.** (1) In mulching, bare ground (top soil) between plants is covered with a protective layer of organic matter like grass clippings, straw, etc. This may include moisture and soil conservation, temperature moderation, salinity and weed control etc. It enriches and protects soil, helping provide a better growing environment.

**34.** (4) A phylum is a scientfic way of grouping together related organisms. All the members of a phylum have a common ancestor and anatomical similarities. Mammals, including humans, are part of the phylum chordata, which also includes fishes, amphibians, reptiles, and birds.

**35.** (4) The life cycle of most mosses begins with the release of spores from a capsule, which opens when a small, lid like structure, called the operculum, degenerates. A single spore germinates to form a branched, filamentous protonema, from which a leafy gametophyte develops. The gametophyte bears organs for sexual reproduction.

**36.** (3) An arthropod is an invertebrate animal having an exoskeleton (external skeleton), a segmented body, and paired jointed appendages. Arthropods form the phylum Euarthropoda, which includes insects, arachnids, myriapods, and crustaceans.

**37.** (4) The state of motion of an object is described by its speed and the direction of motion. The state of rest is considered to be the state of zero speed. An object may be at rest or in motion; both are its states of motion. It is common experience that many a time application of force does not result in a change in the state of motion.

**38.** (2) In astronomy, Kepler's laws of planetary motion are three scientific laws describing the motion of planets around the Sun. These are

(a) All planets move about the Sun in elliptical orbits, having the Sun as one of the foci.

(b) A radius vector joining any planet to the Sun sweeps out equal areas in equal lengths of time.

(c) The squares of the sidereal periods (of revolution) of the planets are directly proportional to the cubes of their mean distances from the Sun.

**39.** (1) In Microsoft Word, the 'Font Color' allows us to change the color of selected text.

**40.** (4) Rust is a general term for a series of iron oxides, usually red oxides, formed by the reaction of iron with oxygen in the presence of water or air moisture. For iron to become iron oxide, three things are required: iron, water and oxygen.

**41.** (4) The substances which have very low ignition temperature and can easily catch fire with a flame are calledinflammablesubstances. Examples of inflammable substances are petrol, alcohol, Liquified Petroleum Gas (LPG), etc

**42.** (1) Osmosis is the flow of a solvent into a solution through a semipermiable membrane. Osmotic pressure is the pressure that stops the process of osmosis. Many freshwater animals are unable to survive if the salinity levels of their surrounding water reach more than .05 percent. Their blood has a higher water concentration than the surrounding sea water. As sea water passes through the mouth and over the gill membranes, water molecules diffuse out of the blood into the sea water by osmosis.

**43.** (4) Vidyanjali is a step forward in creating an ecosystem, wherein education will be attached with imbibing knowledge and improving learning output. Vidyanjali, which is being implemented under the overall aegis of the Sarva Shiksha Abhiyan, will enhance the community involvement in Government run elementary schools and effectively engage children in reading, creative writing, public speaking, play acting, preparing story books etc.

**44.** (2) Insulin is a peptide hormone produced by beta cells of the pancreatic islets, and it is considered to be the main anabolic hormone of the body. The body manufactures insulin in the pancreas, and the hormone is secreted by its beta cells, primarily in response to glucose. In 1923 Frederick Banting and John James Rickard Macleod received the Nobel Prize in Medicine as the co-discoverer of insulin and its therapeutic potential.

**45.** (4) The 2020 Summer Olympics are planned to be held from 24 July to 9 August 2020 in Tokyo. Having previously hosted the 1964 Summer Olympics, Tokyo will become the first city in Asia to host the Olympics twice

**46.** (3) Dhamek Stupa is the most noticeable structure in Sarnath, near Varanasi. Originally built in 249 BCE during the reign of king Ashoka of the Maurya Dynasty, this massive and prominent structure has over time gone through several expansions and additions. The significance of this sacred place is that it marks the spot where Lord Buddha preached the first sermon to his five disciples after attaining enlightenment in Bodh Gaya.

**47.** (2) Dadasaheb Phalke Award is one of the highest and most prestigious awards that is given in the field of cinema. The award, which was instituted in 1969 in honour of Dadasaheb Phalke, an Indian filmmaker who is regarded as "the father of Indian cinema". The annual award is presented by the Directorate of Film Festivals at the National Film Awards ceremony.

**48.** (4) Air is a novel by Geoff Ryman

- Ulysses is a modernist novel by Irish writer James Joyce.
- The Great Gatsby is a novel written by American author F. Scott Fitzgerald

**49.** (1) Oracle Corporation is an American multinational computer technology corporation, headquartered in Redwood Shores, California. Google has accused Apple, Oracle and Microsoft of trying to take down Android through patent litigation, rather than innovating and competing with better products and services. In 2011, HP filed a lawsuit claiming that Oracle had breached an agreement to support the Itanium microprocessor used in HP's high-end enterprise servers.

**50.** (4) The Padma River is a major trans-boundary river in Bangladesh. It is the main distributary of the Ganges which originates in the Himalayas. The Padma enters Bangladesh from India near Chapai Nawabganj. It meets the Jamuna near Aricha and retains its name, but finally meets with the Meghna near Chandpur and adopts the name 'Meghna' before flowing into the Bay of Bengal.

**51.** (1) On dividing 518 by 13, remainder = 11

$\therefore$ Required number = 11

When 11 is subtracted from 518 the resulting number 507 is divisible by 13.

**52.** (1) B, alone can do the work in

$$= \frac{20 \times 12}{20 - 12} = \frac{20 \times 12}{8} = 30 \text{ days}$$

**53.** (3) A regular hexagon has 6 equal equilateral triangles :

$\because$ Area of regular hexagon

$$= 6 \times \frac{\sqrt{3}}{4} a^2$$

$$= 6 \times \frac{\sqrt{3}}{4} \times 9^2$$

$$= \frac{243\sqrt{3}}{2} \text{ sq. cm.}$$

**54.** (2) Effective discount

$= \frac{1}{4+1} \times 100$

$= \frac{1}{5} \times 100 = 20\%$

**55.** (2) Let the present age of P be $7x$ years

Present age of Q = $9x$ years

According to the question,

10 years ago,

$\frac{7x-10}{9x-10} = \frac{5}{7}$

$\Rightarrow 49x - 70 = 45x - 50$

$\Rightarrow 49x - 45x$

$= 70 - 50$

$\Rightarrow 4x = 20 \Rightarrow x = 5$

$\therefore$ Present age of Q

$= 9x = 9 \times 5 = 45$ years

**56.** (1) Total marks of 40 students

$= 40 \times 34 = 1360$

$\therefore$ Correct average

$= \frac{1360+26-62}{40} = \frac{1324}{40}$

$= 33.1$

**57.** (1) Cost price of wholesaler

$= 2000 \times \frac{100}{100+5} \times \frac{100}{100+10}$

$= 2000 \times \frac{100}{105} \times \frac{100}{110}$

= Rs. 1731.6

**58.** (3) Let the number be $x$.

According to the question,

$x + 69 = 103\%$ of $x$

$\Rightarrow x + 69 = \frac{103x}{100}$

$\Rightarrow 100x + 6900 = 103x$

$\Rightarrow 103x - 100x = 6900$

$\Rightarrow 3x = 6900$

$\Rightarrow x = \frac{6900}{3} = 2300$

**59.** (4) Average speed

$= \left(\frac{2xy}{x+y}\right)$ kmph.

$= \left(\frac{2 \times 40 \times 24}{40+24}\right)$ kmph.

$= \left(\frac{2 \times 40 \times 24}{64}\right)$ kmph.

= 30 kmph.

**60.** (4) Principal $= \frac{\text{S.I.} \times 100}{\text{Time} \times \text{Rate}}$

$= \frac{5400 \times 100}{4 \times 12.5}$ = Rs. 10, 800

**61.** (1) $\frac{2}{3}\left(\frac{6x}{5} - \frac{1}{4}\right) + \frac{1}{3} = \frac{9x}{5}$

$\Rightarrow \frac{4x}{5} - \frac{1}{6} + \frac{1}{3} = \frac{9x}{5}$

$\Rightarrow \frac{9x}{5} - \frac{4x}{5} = \frac{1}{3} - \frac{1}{6}$

$\Rightarrow \frac{5x}{5}$

$= \frac{2-1}{6}$

$\Rightarrow x = \frac{1}{6}$

**62.** (4) $a^3 + b^3 = 341$, $ab = 30$

$\therefore a^3 + b^3 = (a+b)^3 - 3ab(a+b)$

$\Rightarrow 341 = (a+b)^3 - 3 \times 30 (a+b)$

$\Rightarrow 341 = (a+b)^3 - 90(a+b)$

$\Rightarrow 31 \times 11 = (a+b)[(a+b)^2 - 90]$

Clearly, $a + b = 11$ satisfies the given equation.

**63.** (3) Let the fraction be $x$.

$\therefore$ Its reciprocal $= \frac{1}{x}$

According to the question,

$\Rightarrow x + \frac{3}{x} = \frac{31}{6}$

$\Rightarrow \frac{x^2+3}{x} = \frac{31}{6}$

$\Rightarrow 6x^2 + 18 = 31x$

$\Rightarrow 6x^2 - 31x + 18 = 0$

$\Rightarrow 6x^2 - 4x - 27x + 18 = 0$

$\Rightarrow 2x(3x-2) - 9(3x-2) = 0$

$\Rightarrow (2x-9)(3x-2) = 0$

$\Rightarrow x = \frac{9}{2}$ or $x = \frac{2}{3}$

**64.** (3) Let $a$ be the first term of A. P. and $d$ be the comon difference.

$\therefore a_n = a + (n-1)d$

$\therefore a + 4d = 1$ .... (i)

$a + 7d = -17$ ..... (ii)

By equation (i) – (ii), we have

$a + 4d = 1$

$\underline{\overset{-}{}a + \overset{-}{}7d = \overset{-}{+}17}$

$-3d = 18 \Rightarrow d = -6$

From equation (i)

$a - 4 \times 6 = 1$

$\Rightarrow a = 24 + 1 = 25$

$S_n = \frac{n}{2}[2a + (n-1)d]$

$\Rightarrow S_{13} = \frac{13}{2}[2 \times 25 + (13-1)(-6)]$

$= \frac{13}{2}(50 - 72)$

$= \frac{13}{2} \times (-22)$

$= 13 \times (-11) = -143$

**65.** (3) Reflection of point $(x_1, y_1)$ in the line $ax + by + c = 0$ :

$\frac{h-x_1}{a} = \frac{k-y_1}{b}$

$= \frac{-2(ax_1+by_1+c)}{\sqrt{a^2+b^2}}$

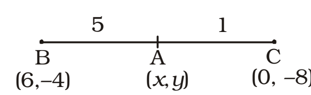
Reflection of point (–4, 3) in $x = -2 \Rightarrow x + 2 = 0$ :

$\frac{h+4}{1} = \frac{-2(-4+2)}{\sqrt{1}}$

$h + 4 = 4 \Rightarrow h = 4 - 4 = 0$

$\therefore$ Reflection = (0, 3)

**66.** (4)




$x = \frac{5 \times 0 + 1 \times 6}{5+1} = \frac{6}{6} = 1$

$y = \frac{5 \times 8 + 1(-4)}{5+1} = \frac{36}{6} = 6$

$\therefore (x, y) = (1, 6)$

**67.** (3) Slope of the line passing through (3, – 4) and (–2, 5)

$= \frac{y_2 - y_1}{x_2 - x_1} = \frac{5+4}{-2-3} = \frac{9}{-5}$

$\therefore$ Slope of line parallel to it

$= \frac{-9}{5}$ $[\because m_1 = m_2]$

**68.** (2) $\Delta XYZ$ and $\Delta PQR$ are similar.

$\therefore \frac{\text{Perimeter of } \Delta XYZ}{\text{Perimeter of } \Delta PQR} = \frac{XY}{PQ}$

$\Rightarrow \frac{4}{9} = \frac{XY}{27}$

$\Rightarrow XY = \frac{4 \times 27}{9} = 12$ cm.

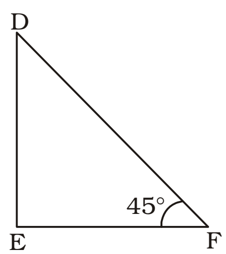
**69.** (2) $\cot 45° + \frac{1}{3} \operatorname{cosec} 60°$

$= 1 + \frac{1}{3} \times \frac{2}{\sqrt{3}}$

$= \frac{3\sqrt{3}+2}{3\sqrt{3}}$

$= \frac{(3\sqrt{3}+2)\sqrt{3}}{3\sqrt{3} \times \sqrt{3}} = \frac{9+2\sqrt{3}}{9}$

**70.** (3)




$\sin F \times \tan F$

$= \sin 45° \times \tan 45°$

$= \frac{1}{\sqrt{2}} \times 1 = \frac{1}{\sqrt{2}}$

**71.** (1) $\cot\theta = \frac{21}{20}$

$\therefore \tan\theta = \frac{20}{21}$

$\therefore \sec\theta = \sqrt{1+\tan^2\theta}$

$= \sqrt{1+\left(\frac{20}{21}\right)^2} = \sqrt{1+\frac{400}{441}}$

$= \sqrt{\frac{441+400}{441}} = \sqrt{\frac{841}{441}} = \frac{29}{21}$

**72.** (1) Fiction and Historical movies are least liked.

**73.** (3) A : B : C : D : E : F
= 35 : 25 : 6 : 5 : 11 : 8
Sum of the terms of ratio = 90
Number of people who like historical movies

$= \frac{6}{90} \times 1200 = 80$

**74.** (3) Required answer

$= \frac{11-8}{90} \times 1200$

$= \frac{3}{90} \times 1200$

= 40

**75.** (1) Let the survey questionnaire be mailed to $x$ people.
$\therefore$ 24% of $x$ = 1200

$\Rightarrow \frac{x \times 24}{100} = 1200$

$\Rightarrow x = \frac{1200 \times 100}{24} = 5000$

**76.** (3) Use 'while' in place of 'upon'

**while (Conjunction)** = during the time that the same time as something else is happening.

**Look at the sentence :**

I was listening to music while my sister was cooking food.

**upon (Preposition)** = used in the same meaning as on.

**Look at the sentence :**

The cat jumped upon the table.

So, correct expression – while crossing the road

**78.** (2) **Immigrant (Noun)** = a person who comes to live permanently in a foreign country

**Emigrant (Noun)** = a person who leaves his own country to settle permanently in another

**Native/citizen (Noun)** = a local inhabitant

**79.** (4) **Treacherous (Adjective)** = dangerous; hazardous disloyal, unfaithful.

**Obnoxious/beastly (Adjective)** = extemely unpleasant; beast–like

**Carefree (Adjective)** = unworried; untroubled

**80.** (2) **Stupor/slumber (Noun)** = state of senselessness; unconsciousness

A runken stupor.

**Liveliness/sensbility/consciousness (Noun)** = awareness; wakefulness; alertness

**81.** (4) **Subtle/understated (Adjective)** = fine, minute, note very obvious; low–key; muted.

**Look at the sentence :**

Subtle lighting.

**Ignorant (Adjective)** = uneducated; unknowledgeable

**Open (Adjective)** = not shut

**Harsh (Adjective)** = strident; discordant; unharmonious

**82.** (4) **Crabby/sullen/glum (Adjective)** = surly; sulky; resentful; disagreeable.

**Look at the sentence :**

A sullen pout.

**Silent (Adjective)** = still; hushed; inaudible

**Agreeable (Adjective)** = pleasant; pleasing.

**Look at the sentence :**

A cheerful and agreeable companion.

**83.** (1) **Mobilise/summon/invite (Verb)** = send for; call for; muster; gather; collect.

**Look at the sentence :**

A waiter was summoned.

**Dismiss (Verb)** = send away; let go; drop, brush off.

**Look at the sentence :**

She dismissed the taxi at the corner of the road.

**Draft (Verb)** = prepare a preliminary version of a document.

**84.** (1) **without any hesitation; instantly**

**Look at the sentence :**

He left the party at the drop of a hat.

**85.** (3) **to uselessly dwell on a subject far beyond** its point of resolution

**Look at the sentence :**

We have all moved on from that problem, so there is no use beating (flogging) a dead horse.

**86.** (3) **Drinking (Gerund)** = the habit of consuming alcohol

**Look at the sentences :**

Drinking is a bad habit.

Swimming is a good exercise.

A gerund is a verbal noun.

**Drinks (Noun)** = liquids that can be consumed as refreshment or nourishment

Hence, drinking (Gerund) will be used here.

**87.** (4) No improvement

'verb + ing form' is apt and appropriate here.

**Look at the sentence :**

He returned without doing anything

He left the house without saying anything.

**88.** (1) **Festal (Adjective)** = relating to festival

**Blithe (Adjective)** = unworried; uncaring

**Cordial (Adjective)** = friendly; genial

**89.** (3) **Valiant (Adjective)** = brave; courageous

**Stout (Adjective)** = fat; plump

**Foolhardy (Adjective)** = reckless; rash

**90.** (1) Correct spelling is : bereaving (= be deprived of a close relation through their death).

**91.** (2) Correct spelling is : diligence (= careful and persistent effort).

**94.** (3) The sanctuary is roamed by majestic Asiatic lions.

It is active voice of simple present tense.

Its passive voice is formed as follows :

Subject + is/am/are + $V_3$ + by + Object

**95.** (3) Navneet asked her how old her grandmother was.

It is direct speech of an interrogative sentence.

Its indirect speech is formed as follows :

⇒ 'said to' (if given) changes to asked

⇒ Wh-family word remains there as a connector

⇒ Simple Present changes to Simple Past

⇒ Pronouns change as per $\frac{\text{SON}}{123}$

⇒ An interrogative sentence changes to an assertive sentence.

**96.** (1) **So far** = until now; up to now; up to this point

**Look at the sentence :**

Diplomatic activity so far has failed.

**97.** (3) **Alternative (Noun)** = option; choice

**Compulsion/constraint/obligation (Noun)** = duty; commitment

**98.** (3) **With (Preposition)** = accompanied by (another person or thing).

**Look at the sentence :**

A nice steak with a bottle of red wine.

**99.** (2) **Renewable (Adjective)** = that Which can be renewed.

**Look at the sentence :**

Renewable sources of energy.

**Brief (Adjective)** = fleeting; quick; cursory

**Untenable (Adjective)** = indefenssible; unarguable

**Temporary (Adjective)** = non-permanent; provisional

**100.** (4) **has dimmed**

The entire paragraph is in Present Tense, *i.e.* Present Perfect Tense.

So, has dimmed (present Perfect Tense) is apt and appropriate

**Note :** The promise has dimmed – it means it has become less bright or distinct.

❑❑❑

# SSC CGL CHALLENGER QUESTIONS

**1.** $\sqrt{2+\sqrt{2+\sqrt{2+2\cos 8\theta}}}$ equal to

(1) 2 sin θ (2) 2 cos θ
(3) 2 sec θ (4) 2 tan θ

**2.** If 2 cos θ = $x+\frac{1}{x}$, then 2 cos 3θ equals to

(1) $x^3+\frac{1}{x^3}$ (2) $x^2+\frac{1}{x^2}$

(3) $x^3-\frac{1}{x^3}$ (4) $x^2-\frac{1}{x^2}$

**3.** If cos θ + cos(120° + θ) = cos( θ – 120°) = 0, then $\cos^3\theta + \cos^3(120° + \theta) + \cos^3(\theta - 120°)$ equals to

(1) $\frac{3}{4}\cos\theta$ (2) $\frac{3}{4}\cos 2\theta$

(3) $\frac{3}{4}\cos 3\theta$ (4) $\frac{3}{4}\sin 3\theta$

**4.** If $m\tan(\theta - 30°) = n\tan(\theta + 120°)$, then the value of cos 2θ equals to

(1) $\frac{1}{2}\left(\frac{m+n}{n-m}\right)$ (2) $\frac{1}{2}\left(\frac{n-m}{m+n}\right)$

(3) $\frac{1}{2}\left(\frac{m-n}{m+n}\right)$ (4) $\frac{1}{2}\left(\frac{m+n}{m-n}\right)$

**5.** The value of cot $7\frac{1}{2}°$ equals to

(1) $\sqrt{2}+\sqrt{3}+\sqrt{4}+\sqrt{6}$ (2) $\sqrt{3}+\sqrt{2}+\sqrt{6}+\sqrt{5}$

(3) $\sqrt{2}-\sqrt{3}-\sqrt{4}+\sqrt{6}$ (4) $\sqrt{2}-\sqrt{3}+\sqrt{6}-\sqrt{4}$

**6.** A 1.5$m$ tall boy is standing at some distance from a 30$m$ tall building. The angle of elevation from his eyes to the top of the building increases from 30° to 60° as he walks towards the building. The distance he walked towards the building will be

(1) $18\sqrt{3}\ m$ (2) $\frac{18}{\sqrt{3}}\ m$

(3) $19\sqrt{3}\ m$ (4) $\frac{19}{\sqrt{3}}\ m$

**7.** A man standing on the deck of a ship, which is 10$m$ above the water level, observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill 30°. The distance of the hill from the ship and the height of the hill is.

(1) 17.32$m$, 40 $m$ (2) 1.732 $m$, 40 $m$
(3) 40 $m$, 17.32 $m$ (4) 40 $m$, 1.732$m$

**8.** A straight highway leads to the foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of 30°, which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is found to be 60°. The time taken by the car to reach the foot of the tower from this point is

(1) 2 sec. (2) 4 sec.
(3) 5 sec. (4) 3 sec.

**9.** A boy is standing on the ground and flying a kite with 100 $m$ of string at an elevation of 30°. Another boy is standing on the roof of a 20$m$ high building and is flying his kite at an elevation of 45°. Both the boys are on opposite sides of both the kites. Find the length of the string, that the second boy must have so that the two kites meet

(1) $20\sqrt{3}\ m$ (2) $30\sqrt{2}\ m$

(3) $20\sqrt{2}\ m$ (4) $30\sqrt{3}\ m$

**10.** A round balloon of radius $r$ subtends an angle 60° at the eye of the observer, while the angle of elevation of its centre is 45°. The height of the centre of the balloon will be

(1) $\frac{\sqrt{2}}{r}$ (2) $\frac{r}{\sqrt{2}}$

(3) $\sqrt{2}r$ (4) $2r$

**11.** If $a^x = b$, $b^y = c$ and $xyz = 1$, then the value of $c^z$ will be

(1) $a$ (2) $b$
(3) $ab$ (4) $a^2$

**12.** If $2^m + 2^{m+1} = 96$, then the maximum prime order pair form, which satisfy the given equation is

(1) 1 (2) 2
(3) 3 (4) 4

**13.** If $\left(\frac{x^l}{x^{-m}}\right)^{l^2+m^2-lm} \times \left(\frac{x^m}{x^{-n}}\right)^{m^2+n^2-mn} \times \left(\frac{x^n}{x^{-l}}\right)^{n^2+l^2-nl}$ $= x^{2k}$, then the value of $k$ will be

(1) $l^3 - m - n^3$ (2) $l^3 + m^3 - n^3$
(3) $l^3 + m^3 + n^3$ (4) $l^3 - m^3 + n^3$

**14.** If $a = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $b = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, then the value of $a^2 + b^2 - 5ab$ will be

(1) 93 (2) 92
(3) 91 (4) 90

**15.** If $\sqrt{x}+\sqrt{x-\sqrt{1-x}}$ = 1, then the value of $x$ will be

(1) $\frac{25}{16}$ (2) $\frac{16}{23}$

(3) $\frac{16}{27}$ (4) $\frac{16}{25}$

**16.** The value of $x$, if the slope of the line joining (–8, 11), (2, $x$) is $\left(\frac{-4}{3}\right)$

(1) $\frac{-7}{3}$ (2) $\frac{7}{3}$ (3) $\frac{1}{3}$ (4) $\frac{5}{3}$

**17.** What is the slope between the lines $y-\sqrt{3}x-5=0$ and $\sqrt{3}y-x+6=0$

(1) 1 (2) $\frac{1}{\sqrt{3}}$ (3) $\frac{2}{\sqrt{3}}$ (4) $\sqrt{3}$

**18.** Slope of a line which cuts off intercepts of equal lengths on the axis is

(1) 1 (2) 2 (3) –1 (4) 3

**19.** What will be the angle between the lines $y-x-7=0$ and $\sqrt{3}y-x+6=0$ ?

(1) $\theta=\tan^{-1}(2+\sqrt{3})$ (2) $\theta=\tan^{-1}(2-\sqrt{3})$

(3) $\theta=\tan^{-1}(1+\sqrt{3})$ (4) $\theta=\tan^{-1}(1-\sqrt{3})$

**20.** The angle between the graph of the linear equation
$239x-239y+5=0$ and the $x$– axis is

(1) 0° (2) 60° (3) 30° (4) 45°

## ANSWERS

| | | | | |
|---|---|---|---|---|
| **1.** (2) | **2.** (1) | **3.** (3) | **4.** (4) | **5.** (1) |
| **6.** (3) | **7.** (1) | **8.** (4) | **9.** (2) | **10.** (3) |
| **11.** (1) | **12.** (1) | **13.** (3) | **14.** (1) | **15.** (4) |
| **16.** (1) | **17.** (2) | **18.** (3) | **19.** (2) | **20.** (4) |

## EXPLANATIONS

**1.** (2) $\sqrt{2+\sqrt{2+\sqrt{2+2\cos 8\theta}}}$

$=\sqrt{2+\sqrt{2+\sqrt{2(1+\cos 8\theta)}}}=\sqrt{2+\sqrt{2+\sqrt{(2\,.\,2\cos^2 4\theta)}}}$

$[\because 1+\cos 2\theta=2\cos^2\theta]$

$=\sqrt{2+\sqrt{2+2\cos 4\theta)}}=\sqrt{2+\sqrt{2(1+\cos 4\theta)}}$

$=\sqrt{2+\sqrt{2\,.\,2\cos^2 2\theta)}}=\sqrt{2+2\cos 2\theta}$

$=\sqrt{2(1+\cos 2\theta)}=\sqrt{2\,.\,2\cos^2\theta}$ = 2 cos θ

**2.** (1) Here, $2\cos\theta=x+\frac{1}{x}$

we know that

$\cos 3\theta=4\cos^3\theta-3\cos\theta$

$\Rightarrow 2\cos 3\theta=8\cos^3\theta-6\cos\theta$

$=(2\cos\theta)^3-3(2\cos\theta)$

$=\left(x+\frac{1}{x}\right)^3-3\left(x+\frac{1}{x}\right)$

$=x^3+\frac{1}{x^3}+3\left(x+\frac{1}{x}\right)-3\left(x+\frac{1}{x}\right)=x^3+\frac{1}{x^3}$

**3.** (3) Here,

$\cos\theta+\cos(120^\circ+\theta)=\cos(\theta-120^\circ)=0$

$\Rightarrow$ Let $\cos\theta=a$, $\cos(120^\circ+\theta)=b$, $\cos(\theta-120^\circ)=c$

$\Rightarrow a+b+c=0$

$\Rightarrow a^3+b^3+c^3=3abc$

$\Rightarrow \cos^3\theta+\cos^3(120^\circ+\theta)+\cos^3(\theta-120^\circ)$

$=3.\cos\theta.\cos(120^\circ+\theta).\cos(\theta-120^\circ)$

$=\frac{3}{2}\cos\theta[2.\cos(120^\circ+\theta)\ \cos(\theta-120^\circ)]$

$=\frac{3}{2}\cos\theta[\cos(120^\circ+\theta+\theta-120^\circ)+\cos(120^\circ+\theta-\theta+120^\circ)]$

$\because 2\cos A\cos B$

$=\cos(A+B)+\cos(A-B)$

$=\frac{3}{2}\cos\theta[\cos 2\theta+\cos 240^\circ]$

$=\frac{3}{2}\cos\theta[\cos 2\theta+\cos(180^\circ+60^\circ)]$

$=\frac{3}{2}\cos\theta[\cos 2\theta-\cos 60^\circ]$

$[\because \cos(180^\circ+\theta)=-\cos\theta]$

$=\frac{3}{2}\cos\theta\left[2\cos^2\theta-1-\frac{1}{2}\right]$

$=\frac{3}{2}\cos\theta\left[\frac{4\cos^2\theta-3}{2}\right]=\frac{3}{4}\cos\theta[4\cos^2\theta-3]$

$=\frac{3}{4}[4\cos^3\theta-3\cos\theta]=\frac{3}{4}\cos 3\theta$

**4.** (4) Here,

$m\tan(\theta-30^\circ)=n\tan(\theta+120^\circ)$

$\Rightarrow \frac{m}{n}=\frac{\tan(\theta+120^\circ)}{\tan(\theta-30^\circ)}=\left[\frac{\tan\theta+\tan 120^\circ}{1-\tan\theta\,.\,\tan 120^\circ}\right]\times$

$\left[\frac{1+\tan\theta\tan 30^\circ}{\tan\theta-\tan 30^\circ}\right]$

$$= \left[\frac{\tan\theta - \sqrt{3}}{1+\sqrt{3}\tan\theta}\right]\left[\frac{1+\frac{1}{\sqrt{3}}\tan\theta}{\tan\theta - \frac{1}{\sqrt{3}}}\right]$$

$$= \frac{(\tan\theta - \sqrt{3})(\tan\theta + \sqrt{3})}{(1+\sqrt{3}\tan\theta)(-1+\sqrt{3}\tan\theta)}$$

$[\because \tan 120° = -\sqrt{3}]$

$$\frac{m}{n} = \frac{\tan^2\theta - 3}{3\tan^2\theta - 1}$$

$\Rightarrow m(3\tan^2\theta - 1) = n(\tan^2\theta - 3)$

$3m\tan^2\theta - m = n\tan^2\theta - 3n$

$\tan^2\theta(3m - n) = m - 3n$

$\Rightarrow \tan^2\theta = \dfrac{m-3n}{3m-n}$

we know that,

$$\cos^2\theta = \frac{1-\tan^2\theta}{1+\tan^2\theta} = \frac{1-\frac{m-3n}{3m-n}}{1+\frac{m-3n}{3m-n}}$$

$$= \frac{2(m+n)}{4(m-n)} = \frac{1}{2}\left(\frac{m+n}{m-n}\right)$$

**5.** (1) $\cot 7\frac{1°}{2} = \dfrac{\cos 7\frac{1°}{2}}{\sin 7\frac{1°}{2}}$ $\left[n^r \text{ तथा } D^r\ 2\cos 7\frac{1}{2}° \text{ से गुणा करने पर}\right]$

$$= \frac{2\cos^2 7\frac{1}{2}°}{2\sin 7\frac{1}{2}°\cos 7\frac{1}{2}°}$$

$$= \frac{1+\cos 15°}{\sin 15°} \quad \left[\begin{array}{l}\because 2\cos^2\theta = 1+\cos 2\theta \\ 2\sin\theta\cos\theta = \sin 2\theta\end{array}\right]$$

$$= \frac{1+\cos(45°-30°)}{\sin(45°-30°)} = \frac{1+\cos 45°\cos 30° + \sin 45°\sin 30°}{\sin 45°\cos 30° - \cos 45°\sin 30°}$$

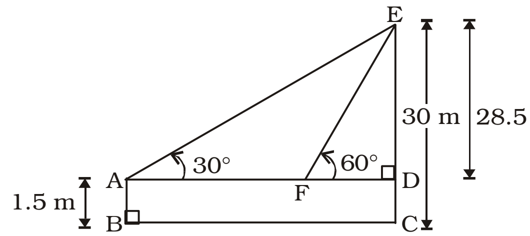
$$= \frac{1+\left[\frac{1}{\sqrt{2}}\times\frac{\sqrt{3}}{2}+\frac{1}{\sqrt{2}}\times\frac{1}{2}\right]}{\frac{1}{\sqrt{2}}\times\frac{\sqrt{3}}{2}-\frac{1}{\sqrt{2}}.\frac{1}{2}}$$

$$= \frac{1+\left[\frac{\sqrt{3}+1}{2\sqrt{2}}\right]}{\frac{\sqrt{3}-1}{2\sqrt{2}}} = \frac{(2\sqrt{2}+\sqrt{3}+1)}{\sqrt{3}-1}\times\frac{(\sqrt{3}+1)}{(\sqrt{3}+1)}$$

$$= \frac{2\sqrt{6}+2\sqrt{2}+3+\sqrt{3}+\sqrt{3}+1}{2}$$

$$= \frac{2\sqrt{6}+2\sqrt{2}+2\sqrt{3}+4}{2} = \sqrt{6}+\sqrt{2}+\sqrt{3}+\sqrt{4}$$

**6.** (3)




In $\Delta ADE$

| 30° | : | 60° | : | 90° |
|---|---|---|---|---|
| 1 | : | $\sqrt{3}$ | : | 2 |
| ED | : | AD | : | AE |

$AD = ED\sqrt{3}$

$\boxed{AD = 28.5\sqrt{3}\text{ m}}$

In $\Delta DEF$

| 30° | : | 60° | : | 90° |
|---|---|---|---|---|
| 1 | : | $\sqrt{3}$ | : | 2 |
| FD | : | ED | : | EF |

$ED = \sqrt{3}\,FD$

$$FD = \frac{ED}{\sqrt{3}} = \frac{28.5}{\sqrt{3}}\times\frac{\sqrt{3}}{\sqrt{3}}$$

$FD = 9.5\sqrt{3}$

Distance covered $= 28.5\sqrt{3} - 9.5\sqrt{3}$

$= 19\sqrt{3}\ m$

**Aliter :**

$d = h(\cot\theta_1 - \cot\theta_2)$

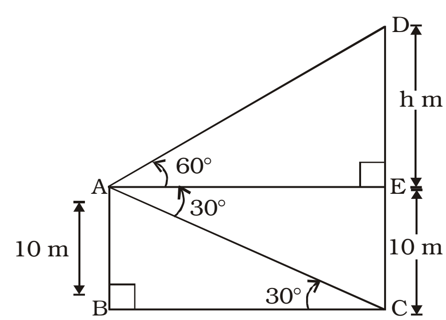
$= 28.5(\cot 30° - \cot 60°)$

$$= 28.5\left(\sqrt{3} - \frac{1}{\sqrt{3}}\right)$$

$$= \frac{28.5\times 2}{\sqrt{3}}\times\frac{\sqrt{3}}{\sqrt{3}}$$

$\boxed{d = 19\sqrt{3}}$

**7.** (1)



In $\Delta$ ADE

30° : 60° : 90°

1 : $\sqrt{3}$ : 2

AE : DE : AD

DE = $\sqrt{3}$ AE

h = $\sqrt{3}$ AE

In $\Delta$ABC

30° : 60° : 90°

1 : $\sqrt{3}$ : 2

AB : BC : AC

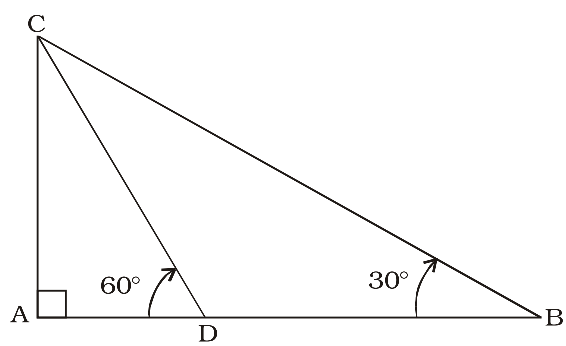
$\Rightarrow$ BC = AB$\sqrt{3}$

BC = $10\sqrt{3}$ = 10 × 1.732 = 17.32 m

$\Rightarrow$ h = $10\sqrt{3} \times \sqrt{3}$ = 30 m

Height of hill = (10 + 30) m = 40 m

**8.** (4)




In $\Delta$ACD

30° : 60° : 90°

1 : $\sqrt{3}$ : 2

AD : AC : CD

$\Rightarrow$ AC = AD$\sqrt{3}$

In $\Delta$ABC

30° : 60° : 90°

1 : $\sqrt{3}$ : 2

AC : AB : BC

$\Rightarrow$ AB = AC$\sqrt{3}$

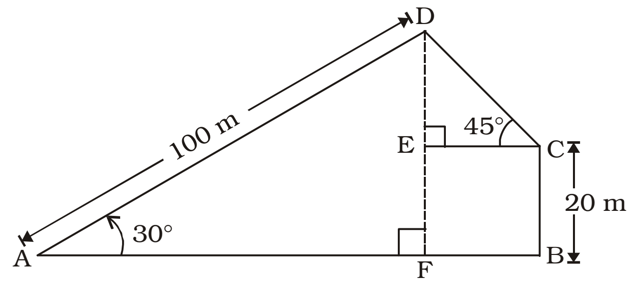
AD + DB = AC$\sqrt{3}$

AD + DB = AD$\sqrt{3} \times \sqrt{3}$ = 3AD

2AD = DB

$\therefore$ Time taken = 3 seconds

**9.** (2)




In $\Delta$ADF,

30° : 60° : 90°

1 : $\sqrt{3}$ : 2

DF : AF : AD

$\Rightarrow$ 2 × DF = AD

$$DF = \frac{AD}{2} = \frac{100}{2} = 50\ m$$

$\therefore$ DE = 50 – 20 = 30 m

In $\Delta$DEC

45° : 45° : 90°

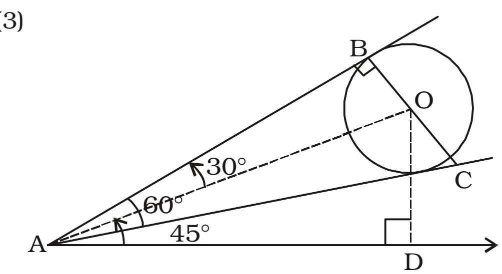
1 : 1 : $\sqrt{2}$

DE : EC : DC

DC = DE$\sqrt{2}$

DC = $30\sqrt{2}\ m$

**10.** (3)




In $\Delta$AOB

30° : 60° : 90°

1 : $\sqrt{3}$ : 2

BO : AB : AO

AO = 2BO

AO = $2r$

In $\Delta$AOD

45° : 45° : 90°

1 : 1 : $\sqrt{2}$

OD : AD : AO

$\Rightarrow$ AO = OD$\sqrt{2}$

$\Rightarrow$ OD = $\frac{AO}{\sqrt{2}} = \frac{2r}{\sqrt{2}}$

OD = $\sqrt{2}r$

**11.** (1) $a^x$ = b (Given)

on multiplying both sides by $y$ in its power

$\Rightarrow (a^x)^y = b^y$

$\Rightarrow a^{xy} = c$

Again multiplying both sides by z is its power

$\Rightarrow \left(a^{xy}\right)^z = c^z$

$\Rightarrow a^{xyz} = c^z$

$\Rightarrow a^1 = c^z$

$\Rightarrow c^z = a$

**12.** (1) Here, $2^m + 2^{m+1} = 96$

$\Rightarrow 2^m + 2^m \times 2 = 96$

$2^m (1 + 2) = 96$

$\Rightarrow 2^m = \frac{96}{3}$

$2^m = 32$

$\Rightarrow 2^m = 2^5$

$m = 5$

Hence, 2 and 3 are small prime number from 5.

$\therefore$ Their sum = 2 + 3 = 5

$\therefore$ required pairs = (2, 3) or (3,2)

**13.** (3) $x^{(l+m)(l^2+m^2-lm)} \times x^{(m+n)(m^2+n^2-mn)} \times x^{(n+l)(n^2+l^2-nl)}$

$\Rightarrow x^{(l^3+m^3)} \times x^{(n^3+l^3)} \times x^{(n^3+l^3)} = x^{2k}$

$\Rightarrow x^{2(l^3+m^3+n^3)} = x^{2k}$

$\boxed{k = l^3 + m^3 + n^3}$

**14.** (1) $a = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$

$a = \left(\frac{\sqrt{3}-\sqrt{2}}{3-2}\right)^2 \qquad \left[\because (a-b)(a+b) = a^2 - b^2\right]$

$a = 3 + 2 - 2\sqrt{6}$

$\boxed{a = 5 - 2\sqrt{6}}$

$b = \frac{\left(\sqrt{3}+\sqrt{2}\right)}{\sqrt{3}-\sqrt{2}} \times \frac{\left(\sqrt{3}+\sqrt{2}\right)}{\sqrt{3}+\sqrt{2}}$

$b = \frac{\left(\sqrt{3}+\sqrt{2}\right)^2}{3-2}$

$b = 3 + 2 + 2\sqrt{6}$

$\boxed{b = 5 + 2\sqrt{6}}$

$a^2 + b^2 - 5ab = \left(5-2\sqrt{6}\right)^2 + \left(5+2\sqrt{6}\right)^2 - 5$

$\left(\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}\right)\left(\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}\right)$

$= 5^2 + \left(2\sqrt{6}\right)^2 - 20\sqrt{6} + 5^2 + \left(2\sqrt{6}\right)^2 + 20\sqrt{6} - 5$

= 25 + 24 + 25 + 24 – 5 = 98 – 5 = 93

**15.** (4) $\sqrt{x} + \sqrt{x - \sqrt{1-x}} = 1$

$\Rightarrow \sqrt{x - \sqrt{1-x}} = 1 - \sqrt{x}$

Squaring both side,

$x - \sqrt{1-x} = 1 + x - 2\sqrt{x}$

$-\sqrt{1-x} = 1 - 2\sqrt{x}$

Again, Squaring both side.

$1 - x = 1 + 4x - 4\sqrt{x}$

$-5x = -4\sqrt{x}$

$\Rightarrow 5\sqrt{x} = 4$

$\Rightarrow \sqrt{x} = \frac{4}{5}$

$x = \frac{16}{25}$

**16.** (1) We know,

Slope of Line $= \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{-4}{3} = \frac{x-11}{2+8}$

$\Rightarrow \frac{-4}{3} = \frac{x-11}{10} \Rightarrow -40 = 3x - 33$

$\Rightarrow -40 + 33 = 3x$

$\Rightarrow -7 = 3x$

$\Rightarrow x = \frac{-7}{3}$

**17.** (2) We know,

Angle between the two lines

$$\tan\theta = \left|\frac{m_1 - m_2}{1 + m_1 m_2}\right|$$

Here,

$m_1 = \sqrt{3}$ and

$$m_2 = \frac{1}{\sqrt{3}}$$

$$\tan\theta = \left|\frac{\sqrt{3} - \frac{1}{\sqrt{3}}}{1 + \sqrt{3}\,\frac{1}{\sqrt{3}}}\right| = \left|\frac{3-1}{2\sqrt{3}}\right|$$

$$\tan\theta = \frac{1}{\sqrt{3}}$$

$$\therefore \text{ Slope } = \frac{1}{\sqrt{3}}$$

**18.** (3) Intercepts of lines is equal.

$\therefore$ Equation of line

$x + y = a$

$\therefore$ Slope = –1

**19.** (2) We know, angles between the lines,

$$\tan\theta = \left|\frac{m_1 + m_2}{1 + m_1 m_2}\right|$$

Here, equation of line

$y - x - 7 = 0$

$\Rightarrow m_1 = 1$

Therefore,

From $\sqrt{3}y - x + 6 = 0$

$$m_2 = \frac{1}{\sqrt{3}}$$

Now,

$$\tan\theta = \left|\frac{m_1 - m_2}{1 + m_1 m_2}\right|$$

$$\Rightarrow \tan\theta = \left|\frac{1 - \frac{1}{\sqrt{3}}}{1 + 1\cdot\frac{1}{\sqrt{3}}}\right|$$

$$= \left|\frac{1 - \frac{1}{\sqrt{3}}}{1 + \frac{1}{\sqrt{3}}}\right| = \left|\frac{\sqrt{3} - 1}{\sqrt{3} + 1}\right|$$

$$= \left|\frac{\sqrt{3} - 1}{\sqrt{3} + 1} \times \frac{(\sqrt{3} - 1)}{(\sqrt{3} - 1)}\right| = \left|\frac{(\sqrt{3} - 1)^2}{\sqrt{3}^2 - 1^2}\right|$$

$$= \left|\frac{\sqrt{3}^2 + 1^2 - 2\sqrt{3}}{3 - 1}\right| = \left|\frac{4 - 2\sqrt{3}}{2}\right|$$

$$\tan\theta = |2 - \sqrt{3}|$$

$$\theta = \tan^{-1}|2 - \sqrt{3}|$$

**20.** (4) $y = 0$ equation $239x - 239y + 5 = 0$

$$\Rightarrow x = \frac{-5}{239}$$

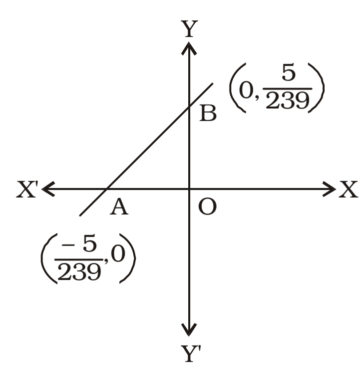
$$\therefore \text{ Co-ordinates of A} = \left(\frac{-5}{239},\ 0\right)$$

Again, putting $x = 0$ in equation

$-239y = -5$

$$\Rightarrow y = \frac{5}{239}$$

$$\therefore \text{ Co-ordinates of B} = \left(0,\ \frac{5}{239}\right)$$




$$\therefore \ OA = OB = \frac{5}{239}$$

$\therefore$ $\angle OAB = \angle OBA = 45°$

$\angle AOB = 90°$

❑❑❑

# SET 44

## SOLVED PAPER

# SSC CGL TIER-II (CBE) EXAM

**Held on : 17.02.2018**

## QUANTITATIVE ABILITIES

**1.** What is the unit digit of the sum of first 111 whole numbers?

(1) 4 (2) 6
(3) 5 (4) 0

**2.** How many 100 digit positive number are there?

(1) $9 \times 10^{99}$
(2) $9 \times 10^{100}$
(3) 10100
(4) $11 \times 10^{98}$

**3.** What is the value of

$$\frac{5.6 \times 0.36 + 0.42 \times 3.2}{0.8 \times 2.1}?$$

(1) 2 (2) 1
(3) 3 (4) $\frac{3}{2}$

**4.** What is the value of

$$\frac{(1.2)^3 + (0.8)^3 + (0.7)^3 - 2.016}{(1.35)\left[(1.2)^2 + (0.8)^2 + (0.7)^2 - 0.96 - 0.84 - 0.56\right]}?$$

(1) $\frac{1}{4}$ (2) $\frac{1}{2}$
(3) 1 (4) 2

**5.** What is the unit digit of $(217)^{413} \times (819)^{547} \times (414)^{624} \times (342)^{812}$?

(1) 2 (2) 4
(3) 6 (4) 8

**6.** What is the value of

$$S = \frac{1}{1 \times 3 \times 5} + \frac{1}{1 \times 4} + \frac{1}{3 \times 5 \times 7} + \frac{1}{4 \times 7} + \frac{1}{5 \times 7 \times 9} + \frac{1}{7 \times 10} + \ldots\ldots$$

upto 20 terms, then what is the value of S?

(1) $\frac{6179}{15275}$ (2) $\frac{6070}{14973}$
(3) $\frac{7191}{15174}$ (4) $\frac{5183}{16423}$

**7.** Which of the following is **TRUE** ?

I. $\frac{1}{\sqrt[3]{12}} > \frac{1}{\sqrt[4]{29}} > \frac{1}{\sqrt{5}}$

II. $\frac{1}{\sqrt[4]{29}} > \frac{1}{\sqrt[3]{12}} > \frac{1}{\sqrt{5}}$

III. $\frac{1}{\sqrt{5}} > \frac{1}{\sqrt[3]{12}} > \frac{1}{\sqrt[4]{29}}$

IV. $\frac{1}{\sqrt{5}} > \frac{1}{\sqrt[4]{29}} > \frac{1}{\sqrt[3]{12}}$

(1) Only I (2) Only II
(3) Only III (4) Only IV

**8.** N is the largest two digit number, which when divided by 3, 4 and 6 leaves the remainder 1, 2 and 4 respectively. What is the remainder when N is divided by 5?

(1) 4 (2) 2
(3) 0 (4) 1

**9.** Which of the following is **TRUE** ?

I. $\sqrt[3]{11} > \sqrt{7} > \sqrt[4]{45}$

II. $\sqrt{7} > \sqrt[3]{11} > \sqrt[4]{45}$

III. $\sqrt{7} > \sqrt[4]{45} > \sqrt[3]{11}$

IV. $\sqrt[4]{45} > \sqrt{7} > \sqrt[3]{11}$

(1) Only I (2) Only II
(3) Only III (4) Only IV

**10.** A and B are positive integers. If A + B + AB = 65, then what is the difference between A and B (A, B $\le$ 15) ?

(1) 3 (2) 4
(3) 5 (4) 6

**11.** What is the value of $14^3 + 16^3 + 18^3 + \ldots\ldots + 30^3$?

(1) 134576 (2) 120212
(3) 115624 (4) 111672

**12.** What is the value of

$$\sqrt{4600 + \sqrt{540 + \sqrt{1280 + \sqrt{250} + \sqrt{36}}}}\ ?$$

(1) 69 (2) 68
(3) 70 (4) 72

**13.** If $x + y + z = 0$, then what is the value of $\frac{(3y^2 + x^2 + z^2)}{(2y^2 - xz)}$ ?

(1) 2 (2) 1
(3) $\frac{3}{2}$ (4) $\frac{5}{3}$

**14.** If $P = 7 + 4\sqrt{3}$ and PQ = 1, then what is the value of $\frac{1}{P^2} + \frac{1}{Q^2}$ ?

(1) 196 (2) 194
(3) 206 (4) 182

**15.** If $a^3 + 3a^2 + 9a = 1$, then what is the value of $a^3 + \frac{3}{a}$?

(1) 31 (2) 26
(3) 28 (4) 24

**16.** $x$, $y$ and $z$ are real numbers. If $x^3 + y^3 + z^3 = 13$, $x + y + z = 1$ and $xyz = 1$, then what is the value of $xy + yz + zx$?

(1) – 1 (2) 1
(3) 3 (4) – 3

**17.** If $\frac{(a+b)}{c} = \frac{6}{5}$ and $\frac{(b+c)}{a} = \frac{9}{2}$, then what is the value of $\frac{(a+c)}{b}$ ?

(1) $\frac{9}{5}$ (2) $\frac{11}{7}$
(3) $\frac{7}{11}$ (4) $\frac{7}{4}$

**18.** If $x^3 + y^3 + z^3 = 3(1 + xyz)$, $P = y + z - x$, $Q = z + x - y$ and $R = x + y - z$, then what is the value of $P^3 + Q^3 + R^3 - 3PQR$ ?

(1) 9 (2) 8
(3) 12 (4) 6

**19.** If $x_1 x_2 x_3 = 4(4 + x_1 + x_2 + x_3)$, then what is the value of

$$\left[\frac{1}{(2+x_1)}\right]+\left[\frac{1}{(2+x_2)}\right]+\left[\frac{1}{(2+x_3)}\right] ?$$

(1) 1 (2) $\frac{1}{2}$

(3) 2 (4) $\frac{1}{3}$

**20.** If $\alpha$ and $\beta$ are the roots of equation $x^2 - x + 1 = 0$, then which equation will have roots $\alpha^3$ and $\beta^3$ ?

(1) $x^2 + 2x + 1 = 0$
(2) $x^2 - 2x - 1 = 0$
(3) $x^2 + 3x - 1 = 0$
(4) $x^2 - 3x + 1 = 0$

**21.** If $3x + 5y + 7z = 49$ and $9x + 8y + 21z = 126$, then what is the value of $y$?

(1) 4 (2) 2
(3) 3 (4) 5

**22.** Cost of 4 pens, 6 note books and 9 files is Rs. 305. Cost of 3 pens, 4 notebooks and 2 files is Rs. 145. What is the cost (in Rs.) of 5 pens, 8 note books and 16 files?

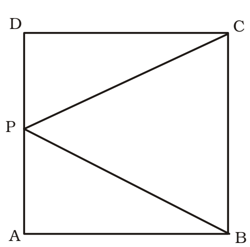
(1) 415
(2) 465
(3) 440
(4) Can not be determined

**23.** ABC is a right angled triangle. $\angle BAC = 90°$ and $\angle ACB = 60°$. What is the ratio of the circum radius of the triangle to the side AB ?

(1) 1 : 2 (2) $1 : \sqrt{3}$

(3) $2 : \sqrt{3}$ (4) 2 : 3

**24.** In the given figure, ABCD is a square whose side is 4 cm. P is a point on the side AD. What is the minimum value (in cm.) of BP + CP?




(1) $4\sqrt{5}$ (2) $4\sqrt{4}$

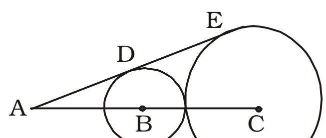
(3) $6\sqrt{3}$ (4) $4\sqrt{6}$

**25.** Triangle ABC is similar to triangle PQR and AB : PQ = 2 : 3. AD is the median to the side BC in triangle ABC and PS is the median to the side QR in triangle PQR. What is the value of $\left(\frac{BD}{QS}\right)^2$ ?

(1) $\frac{3}{5}$ (2) $\frac{4}{9}$

(3) $\frac{2}{3}$ (4) $\frac{4}{7}$

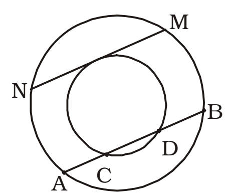
**26.** In the given figure, B and C are the centres of the two circles. ADE is the common tangent to the two circles. If the ratio of the radius of both the circles is 3 : 5 and AC = 40, then what is the value of DE?




(1) $3\sqrt{15}$ (2) $5\sqrt{15}$

(3) $6\sqrt{15}$ (4) $4\sqrt{15}$

**27.** In the given figure, AB = 30 cm. and CD = 24 cm. What is the value (in cm.) of MN?



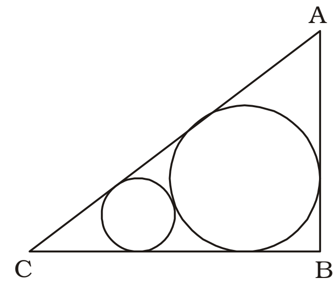

(1) 18 (2) 9
(3) 12 (4) 15

**28.** AB and AC are the two tangents to a circle whose radius is 6 cm. If $\angle BAC = 60°$, then what is the value (in cm.) of $\sqrt{(AB^2 + AC^2)}$ ?

(1) $6\sqrt{6}$ (2) $4\sqrt{6}$

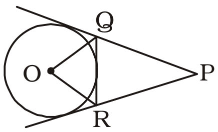
(3) $9\sqrt{3}$ (4) $8\sqrt{3}$

**29.** In the given figure, ABC is a right angled triangle. $\angle ABC = 90°$ and $\angle ACB = 60°$. If the radius of the smaller circle is 2 cm, then what is the radius (in cm.) of the larger circle?



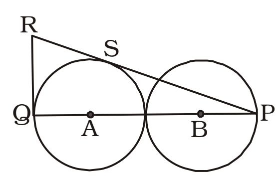

(1) 4 (2) 6
(3) 4 .5 (4) 7.5

**30.** In the given figure, O is centre of the circle. Circle has 3 tangents. If $\angle QPR = 45°$, then what is the value (in degrees) of $\angle QOR$ ?




(1) 67.5 (2) 72
(3) 78 .5 (4) 65

**31.** In the given figure, two identical circles of radius 4 cm. touch each other. A and B are the centres of the two circles. If RQ is a tangent to the circle, then what is the length (in cm.) of RQ?




(1) $3\sqrt{3}$ (2) $2\sqrt{6}$

(3) $4\sqrt{2}$ (4) $6\sqrt{2}$

**32.** The radius of two circles is 3 cm. and 4 cm. The distance between the centres of the circles is 10 cm. What is the ratio of the length of direct common tangent to the length of the transverse common tangent?

(1) $\sqrt{51} : \sqrt{68}$

(2) $\sqrt{33} : \sqrt{17}$

(3) $\sqrt{66} : \sqrt{51}$

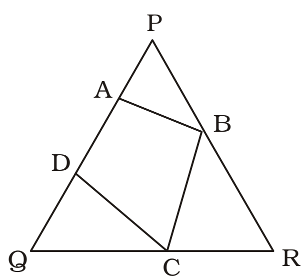
(4) $\sqrt{28} : \sqrt{17}$

**33.** ABC is a triangle. AB = 5 cm., AC = $\sqrt{41}$ cm. and BC = 8 cm. AD is perpendicular to BC. What is the area (in cm$^2$.) of triangle ABD?

(1) 12 (2) 6

(3) 10 (4) 20

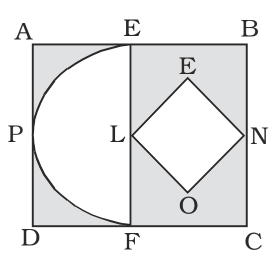
**34.** In the given figure, PQR is a triangle and quadrilateral ABCD is incribed in it. QD = 2 cm., QC = 5 cm., CR = 3 cm., BR = 4 cm., PB = 6 cm., PA = 5 cm and AD = 3 cm. What is the area (in cm$^2$.) of the quadrilateral ABCD ?




(1) $\frac{(23\sqrt{21})}{4}$ (2) $\frac{(15\sqrt{21})}{4}$

(3) $\frac{(17\sqrt{21})}{5}$ (4) $\frac{(23\sqrt{21})}{5}$

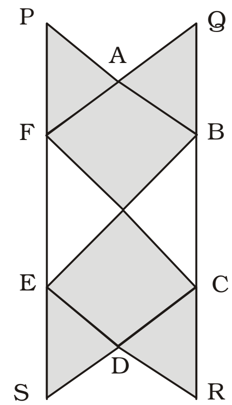
**35.** In the given figure, ABCD is a square of side 14 cm. E and F are mid-points of sides AB and DC respectively. EPF is a semicircle whose diameter is EF. LMNO is square. What is the area (in cm.$^2$) of the shaded region?




(1) 108.5 (2) 94.5

(3) 70 (4) 120

**36.** In the given figure, ABCDEF is a regular hexagon whose side is 6 cm. APF, QAB, DCR and DES are equilateral triangles. What is the area (in cm$^2$.) of the shaded region?




(1) $24\sqrt{3}$ (2) $18\sqrt{3}$

(3) $72\sqrt{3}$ (4) $36\sqrt{3}$

**37.** Length and breadth of a rectangle are 8 cm. and 6 cm. respectively. The rectangle is cut on its four vertices such that the resulting figure is a regular octagon. What is the side (in cm.) of the octagon?

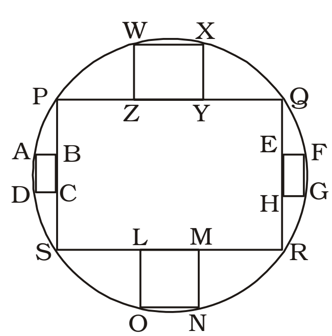
(1) $3\left(\sqrt{11}\right)-7$

(2) $5\left(\sqrt{13}\right)-8$

(3) $5\left(\sqrt{7}\right)-11$

(4) $6\left(\sqrt{11}\right)-9$

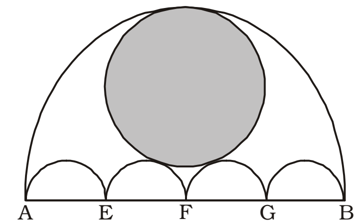
**38.** In the given figure, radius of a circle is $14\sqrt{2}$ cm. PQRS is a square. EFGH, ABCD, WXYZ and LMNO are four identical squares. What is the total area (in cm$^2$.) of all the small squares ?




(1) 31.36 (2) 125.44

(3) 62.72 (4) 156.8

**39.** In the given figure, AB AE, EF, FG and GB are semicircles. AB = 56 cm. and AE = EF = FG = GB. What is the area (in cm$^2$.) of the shaded region?




(1) 414.46 (2) 382.82

(3) 406.48 (4) 394.24

**40.** A right prism has a square base with side of base 4 cm. and the height of prism is 9 cm. The prism is cut in three parts of equal heights by two planes parallel to its base. What is the ratio of the volume of the top, middle and the bottom part respectively?

(1) 1 : 8 : 27 (2) 1 : 7 : 19

(3) 1 : 8 : 20 (4) 1 : 7 : 20

**41.** Radius of base of a hollow cone is 8 cm. and its height is 15 cm. A sphere of largest radius is put inside the cone. What is the ratio of radius of base of cone to the radius of sphere?

(1) 5 : 3 (2) 4 : 1

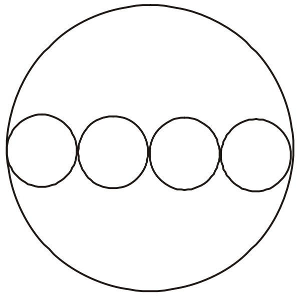
(3) 2 : 1 (4) 7 : 3

**42.** The ratio of curved surface area of a right circular cylinder to the total area of its two bases is 2 : 1. If the total surface area of cylinder is 23100 cm$^2$., then what is the volume (in cm$^3$.) of cylinder?

(1) 247200 (2) 269500

(3) 312500 (4) 341800

**43.** A solid cylinder has radius of base 14 cm. and height 15 cm. 4 identical cylinders are cut from each base as shown in the given figure. Height of small cylinder is 5 cm. What is the total surface area (in cm$^2$.) of the remaining part?



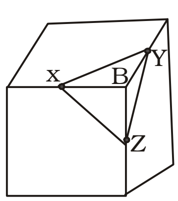
(1) 3740 (2) 3432
(3) 3124 (4) 2816

**44.** 10 identical solid spherical balls of radius 3 cm. are melted to form a single sphere. In this process 20% of solid is wasted. What is the radius (in cm.) of the bigger sphere?
(1) 24 (2) 12
(3) 8 (4) 6

**45.** The radius of base of a solid cylinder is 7 cm and its height is 21 cm. It is melted and converted into small bullets. Each bullet is of same size. Each bullet consisted of two parts viz. a cylinder and a hemisphere on one of its base. The total height of bullet is 3.5 cm and radius of base is 2.1 cm. Approximately how many complete bullets can be obtained?
(1) 83 (2) 89
(3) 74 (4) 79

**46** A cuboid of size 50 cm. × 40 cm. × 30 cm is cut into 8 identical parts by 3 cuts. What is the total surface area (in cm$^2$.) of all the 8 parts?
(1) 11750 (2) 14100
(3) 18800 (4) 23500

**47.** A right triangular pyramid XYZB is cut from cube as shown in figure. The side of cube is 16 cm. X, Y and Z are midpoints of the edges of the cube. What is the total surface area (in cm.$^2$) of the pyramid?




(1) 48 $\left[(\sqrt{3})+1\right]$

(2) 24 $\left[4+(\sqrt{3})\ 1\right]$

(3) 28 $\left[6+(\sqrt{3})\right]$

(4) 32 $\left[3+(\sqrt{3})\right]$

**48.** What is the value of

$$\frac{[(\sin x+\sin y)\ (\sin x-\sin y)]}{[(\cos x+\cos y)\ (\cos y-\cos x)]}\ ?$$

(1) 0 (2) 1
(3) –1 (4) 2

**49.** What is the value of

$$\left[\frac{(\tan 5\theta+\tan 3\theta)}{4\cos 4\theta\ (\tan 5\theta-\tan 3\theta)}\right]\ ?$$

(1) sin2θ (2) cos2θ
(3) tan4θ (4) cot2θ

**50.** What is the value of $\left(\frac{4}{3}\right)$

$\cot^2\left(\frac{P}{2}\right)$ + 3 $\cos^2$ (150°) – 4

$\text{cosec}^2 45°$ + 8 sin $\left(\frac{P}{2}\right)$?

(1) $\frac{25}{4}$ (2) 1

(3) $-\frac{7}{2}$ (4) $\frac{13}{2}$

**51.** What is the value of sin (B – C) cos (A – D) + sin (A – B) cos (C – D) + sin (C – A) cos (B – D)?

(1) $\frac{3}{2}$ (2) – 3

(3) 1 (4) 0

**52.** What is the value of

$$\frac{\left\{\begin{array}{l}[4\cos\ (90-A)\ \sin^3\ (90+A)]-\\ [4\sin\ (90+A)\ \cos^3\ (90-A)]\end{array}\right\}}{\cos\left(\frac{180+8A}{2}\right)}\ ?$$

(1) 1 (2) –1
(3) 0 (4) 2

**53.** What is the value of

$\cos\left[\frac{(180-\theta)}{2}\right]\ \cos\left[\frac{(180-9\theta)}{2}\right]$ +

$\sin\left[\frac{(180-3\theta)}{2}\right]\ \sin\left[\frac{(180-3\theta)}{2}\right]$ ?

(1) sin 2θ sin 4θ
(2) cos 2θ cos 6θ
(3) sin 2θ sin 6θ
(4) cos 2θ cos 4θ

**54.** What is the value of
[$\tan^2$ (90 – θ) – $\sin^2$ (90 – θ)] $\text{cosec}^2$ (90 – θ) $\cot^2$ (90 –θ) ?
(1) 0 (2) 1
(3) –1 (4) 2

**55.** Two points P and Q are at the distance of $x$ and $y$ (where $y > x$) respectively from the base of a building and on a straight line. If the angles of elevation of the top of the building from points P and Q are complementary, then what is the height of the building?

(1) $xy$ (2) $\sqrt{\left(\frac{y}{x}\right)}$

(3) $\sqrt{\left(\frac{x}{y}\right)}$ (4) $\sqrt{(xy)}$

**56.** The tops of two poles of height 60 metres and 35 metres are connected by a rope. If the rope makes an angle with the horizontal whose tangent is $\frac{5}{9}$ metres, then what is the distance (in metres) between the two poles?
(1) 63 (2) 30
(3) 25 (4) 45

**57.** A Navy captain going away from a lighthouse at the speed of 4 $\left[(\sqrt{3})-1\right]$ m/s. He observes that it takes him 1 minute to change the angle of elevation of the top of the lighthouse from 60° to 45°. What is the height (in metres) of the lighthouse?

(1) $240\sqrt{3}$

(2) 480 $\left[(\sqrt{3})-1\right]$

(3) $360\sqrt{3}$ (4) $280\sqrt{2}$

**Directions (58–62) :** The table given below shows the number of applicants who have applied for exam at various centres as percentage of total number of applicants. The table also shows the number online applicants and absent applicants as a percentage of total applicants of each centre. Total number of applicants is 1200000.

| Exam centre | Total applicant | Online applicant | Absent applicant |
|---|---|---|---|
| F | 15% | 30% | 36% |
| G | 25% | 44% | 25% |
| H | 20% | 52% | 32% |
| J | 24% | 46% | 18% |
| K | 16% | 38% | 20% |

**58.** If A equals to 15% of total applicants who are present at exam centre F and B equals to present applicants at exam centre K, then A is what per cent of B?
(1) 18.18 (2) 11.25
(3) 13.33 (4) 14.28

**59.** Total number of offline applicants from exam centre H, K and F are how much less than the total number of present applicants from exam centre G and J?
(1) 111420 (2) 100920
(3) 127370 (4) 109990

**60.** What are the total number of offline applicants from the exam centre F, H, J and G?
(1) 393720 (2) 963000
(3) 564720 (4) 428540

**61.** What is the ratio of total number of present applicants from exam centre K to total number of offline applicants from exam centre J?
(1) 40 : 41 (2) 80 : 81
(3) 10 : 9 (4) 7 : 11

**62.** What are the total number of present applicants from exam centre H and G together?
(1) 238200 (2) 151800
(3) 388200 (4) 442650

**63.** Solution A contains 10% acid and solution B contains 30% acid. In what ratio should solution A be mixed with Solution B to obtain a mixture with 25% acid?
(1) 1 : 2 (2) 3 : 1
(3) 1 : 3 (4) 2 : 1

**64.** In what ratio should coffee powder costing Rs. 2500 per kg be mixed with coffee powder costing Rs. 1500 per kg so that the cost of the mixture is Rs. 2250 per kg.?
(1) 1 : 4 (2) 4 : 1
(3) 3 : 1 (4) 1 : 3

**65.** A and B started a partnership business investing in the ratio of 3 : 8. C joined them after 4 months with an amount equal to $\frac{3}{4}$th of B. What was their profit (in Rs.) at the end of the year if C got Rs. 24,000 as his share?
(1) 120000 (2) 150000
(3) 90000 (4) 180000

**66.** A and B invest in a business in the ratio 4 : 5. After 10 months B leaves the business after withdrawing his investment. In the first year the business made a profit of Rs. 49,000. What is B's share (in Rs.) of this profit?
(1) 25000 (2) 20000
(3) 18000 (4) 22000

**67.** Working together A and B can do a job in 40 days, B and C in 36 days and all three together in 24 days. In how many days can B alone do the job?
(1) 60 (2) 90
(3) 72 (4) 120

**68.** A, B and C can do a job working alone in 50, 75 and 20 days respectively. They all work together for 4 days, then C quits. How many days will A and B take to finish the rest of the job?
(1) 20 (2) 30
(3) 18 (4) 24

**69.** A can do 50% of the job in 16 days, B can do $\frac{1}{4}$th of the job in 24 days. In how many days can they do $\frac{3}{4}$th of the job working together?
(1) 24 (2) 9
(3) 21 (4) 18

**70.** A and B can together complete a task in 18 hours. After 6 hours A leaves. B takes 36 hours to finish rest of the task. How many hours would A have taken to do the task if he worked alone?
(1) 54 (2) 45
(3) 21 (4) 27

**71.** 1 packet of biscuits costs Rs. 16 but a pack of 4 of the same packet of biscuits costs Rs. 56. What is the effective discount (in %) on the pack?
(1) 8 (2) 10
(3) 7.5 (4) 12.5

**72.** The cost price of an article is Rs. $x$. It is marked up by 200%. It is sold at Rs. 540 after giving 25% discount. What is the value of $x$ (in Rs.)?
(1) 360 (2) 250
(3) 300 (4) 240

**73.** A Rs. 750 tin of cheese is offered at 8% discount and a Rs. 1,250 tin of butter at 20% discount. If we buy 5 tins of cheese and 3 tins of butter, what is the effective discount we get (in %) ?
(1) 12 (2) 15
(3) 14 (4) 16

**74.** The selling price of an article is Rs. 816 if the discount on it is 15%. What would be the selling price of the article (in Rs.) if the discount on it is 25%?
(1) 750 (2) 720
(3) 800 (4) 700

**75.** The entry ticket at a fun park was increased in the ratio 7 : 9, due to which footfalls fell in the ratio 13 : 11. What is the new daily collection (in Rs.), if the daily collection before the price hike was Rs. 2,27,500?
(1) 237500 (2) 247500
(3) 232500 (4) 242500

**76** If 6A = 4B = 9C; What is A : B : C ?
(1) 6 : 4 : 9 (2) 9 : 4 : 6
(3) 4 : 9 : 6 (4) 6 : 9 : 4

**77.** If 50 less had applied and 25 less selected, the ratio of selected to unselected would have been 9 : 4. So how many candidates had applied if the

ratio of selected to unselected was 2 : 1.
(1) 125 (2) 250
(3) 375 (4) 500

**78.** What is the fourth proportional to 189, 273 and 153?
(1) 117 (2) 299
(3) 221 (4) 187

**79.** Rs. 11,550 has to be divided between X, Y and Z such that X gets $\frac{4}{5}$ of what Y gets and Y gets $\frac{2}{3}$ of what Z gets. How much more does Z get over X (in Rs.)?
(1) 7200 (2) 1800
(3) 1170 (4) 2450

**80.** Before a battle the ratio of tanks to planes in an army was 5 : 3. During the war 1000 tanks were destroyed and 800 planes were destroyed. The ratio of tanks to planes became 2 : 1. What is the number of tanks after the war.
(1) 2000 (2) 1000
(3) 3000 (4) 4000

**81.** The average marks of 50 students in an examination was 65. It was later found that the marks of one student had been wrongly entered as 83 instead of 38. The correct average is?
(1) 63.9 (2) 64.5
(3) 64.7 (4) 64.1

**82.** In a class of 50 students there are 22 girls who scored an average of 35 marks in the test. What is the average marks of the boys if the class average is 42 marks?
(1) 50 (2) 52 .5
(3) 47.5 (4) 55

**83.** The average of 41 consecutive odd numbers is 49. What is the largest number.
(1) 89 (2) 91
(3) 93 (4) 95

**84.** A batsman scores 87 runs in the 21st match of his career. His average runs per match increases by 2. What was his average before the 21st match.
(1) 45 (2) 46
(3) 44 (4) 43

**85.** Oil equal to 20% of the weight of ground nut is extracted in a mill. The matter left after extraction is sold as cattle feed at the rate of Rs. 12.5 per kg. The groundnuts are bought at Rs. 20 per kg. The processing cost is Rs. 5 per kg. At what price (Rs. per kg.) should the oil be sold to earn 20% profit on total costs (Total cost = Cost of groundnuts and Processing costs) ?
(1) 250 (2) 150
(3) 200 (4) 100

**86.** If a vendor sells a coconut at Rs. 14.4 he makes 10% loss. If he wants to make 25% profit, then at what price (in Rs.) should he sell?
(1) 18 (2) 20
(3) 16 (4) 22

**87.** At a village trade fair a man buys a horse and a camel together for Rs. 51,250. He sold the horse at a profit of 25% and the camel at a loss of 20%. If he sold both the animals at the same price, then the cost price of the cheaper animal was Rs. ________.
(1) 6600 (2) 7500
(3) 25000 (4) 20000

**88.** On a certain item profit is 150%. If the cost price increases by 25% what will be the new profit margin (in %)?
(1) 25 (2) 50
(3) 100 (4) 75

**89.** 40% are the passing marks. A student gets 250 marks yet fails by 38 marks. What is the maximum marks?
(1) 720 (2) 750
(3) 800 (4) 840

**90.** Ravi is 12 years younger than Surya. Ravi's age is 40% of the sum of his and Surya's age. What will be Surya's age 9 years hence?
(1) 36 (2) 24
(3) 33 (4) 45

**91.** 5% of $a$ = $b$, then $b$% of 20 is the same as ________.
(1) 20% of $\frac{a}{2}$
(2) 50% of $\frac{a}{20}$
(3) 50% of $\frac{a}{2}$
(4) 20% of $\frac{a}{20}$

**92.** A man's annual income has increased by Rs. 5 lakhs but the tax on income that he has to pay has reduced from 12% to 10%. He now pays Rs. 10,000 more income tax. What is his increased income (in Rs. lakhs)?
(1) 20 (2) 25
(3) 15 (4) 10

**93.** A racing car going at an average speed of 108 km./hr. takes 15 minutes to complete a lap on a racing track. By how much should it increase its speed (in km./hr.) to complete the lap in 12 minutes?
(1) 24 (2) 21
(3) 27 (4) 30

**94.** Train A takes 45 minutes more than train B to travel a distance of 450 km. Due to engine trouble speed of train B falls by a quarter, so it takes 30 minutes more than Train A to complete the same journey. What is the speed of Train A (in km./hr.)?
(1) 90 (2) 120
(3) 100 (4) 110

**95.** Two cars A and B travel from one city to another, at speeds of 72 km./hr. and 90 km./hr. respectively. If car B takes 1 hour lesser than car A for the journey, then what is the distance (in km.) between the two cities?
(1) 270 (2) 360
(3) 240 (4) 400

**96.** B starts 4 minutes after A from the same point, for a place at a distance of 7 miles from the starting point. A on reaching the destination turns back and walks a mile where he meets B. If A's speed is a mile in 8 minutes then B's speed is a mile in ____ minutes.
(1) 9 (2) 12
(3) 10 (4) 8

**97.** If the amount on a certain principal in 3 years at 12% rate of interest compounded annually is Rs. 12,000, what will be the amount (in Rs.) after the 4th year?
(1) 14330 (2) 15440
(3) 13440 (4) 14550

**98.** The amount (in Rs.) received at 10% per annum compound interest after 3 years is Rs.

1,19,790. What was the principal?
(1) 90000 (2) 1,00,000
(3) 80000 (4) 75000

**99.** In how many months will Rs. 8,000 yield Rs. 2,648 as compound interest at 20% per annum compounded semi-annually?
(1) 18 (2) 24
(3) 12 (4) 30

**100.** What is the rate of interest (in %) if simple interest earned on a certain sum for the 3rd year is Rs. 2,000 and compound interest earned in 2 years is Rs. 4,160?
(1) 8 (2) 10
(3) 12 (4) 6

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (3) | **2.** (1) | **3.** (1) | **4.** (4) |
| **5.** (4) | **6.** (2) | **7.** (3) | **8.** (1) |
| **9.** (3) | **10.** (3) | **11.** (4) | **12.** (2) |
| **13.** (1) | **14.** (2) | **15.** (3) | **16.** (4) |
| **17.** (4) | **18.** (3) | **19.** (2) | **20.** (1) |
| **21.** (3) | **22.** (2) | **23.** (2) | **24.** (1) |
| **25.** (2) | **26.** (4) | **27.** (1) | **28.** (1) |
| **29.** (2) | **30.** (1) | **31.** (3) | **32.** (2) |
| **33.** (2) | **34.** (3) | **35.** (2) | **36.** (3) |
| **37.** (1) | **38.** (1) | **39.** (4) | **40.** (*) |
| **41.** (1) | **42.** (2) | **43.** (2) | **44.** (4) |
| **45.** (1) | **46.** (3) | **47.** (4) | **48.** (2) |
| **49.** (2) | **50.** (1) | **51.** (4) | **52.** (2) |
| **53.** (2) | **54.** (2) | **55.** (4) | **56.** (4) |
| **57.** (1) | **58.** (2) | **59.** (2) | **60.** (3) |
| **61.** (2) | **62.** (3) | **63.** (3) | **64.** (3) |
| **65.** (3) | **66.** (1) | **67.** (2) | **68.** (1) |
| **69.** (4) | **70.** (4) | **71.** (4) | **72.** (4) |
| **73.** (3) | **74.** (2) | **75.** (2) | **76.** (4) |
| **77.** (3) | **78.** (3) | **79.** (4) | **80.** (1) |
| **81.** (4) | **82.** (3) | **83.** (1) | **84.** (1) |
| **85.** (4) | **86.** (2) | **87.** (4) | **88.** (3) |
| **89.** (1) | **90.** (4) | **91.** (4) | **92.** (2) |
| **93.** (3) | **94.** (3) | **95.** (2) | **96.** (3) |
| **97.** (3) | **98.** (1) | **99.** (1) | **100.** (1) |

## EXPLANATIONS

**1.** (3) Sum of 0,1,2,3,........110

$$= \frac{110(110+1)}{2} = 6105$$

$$\left[\because 1+2+3+\ldots+n = \frac{n(n+1)}{2}\right]$$

$\therefore$ Unit's digit = 5

**2.** (1) Number of one-digit positive numbers = 9 = 9 × 10°
Number of two digit positive numbers = 90 = $9 \times 10^1$
Number of three digit positive numbers = 900 = $9 \times 10^2$
$\therefore$ Number of 100 digit positive numbers = $9 \times 10^{99}$

**3.** (1) Expression

$$= \frac{5.6 \times 0.36}{0.8 \times 2.1} + \frac{0.42 \times 3.2}{0.8 \times 2.1}$$

$$= \frac{5.6 \times 36}{8 \times 21} + \frac{42 \times 3.2}{8 \times 21}$$

= 1.2 + 0.8 = 2

**4.** (4) $a^3 + b^3 + c^3 - 3abc$
$= (a + b + c)\ (a^2 + b^2 + c^2 - ab - bc - ca)$

$$\Rightarrow \frac{(1.2)^3 + (0.8)^3 + (0.7)^3 - 2.016}{(1.35)[(1.2)^2 (0.8)^2 + (0.7)^2 - 0.96 - 0.84 - 0.56]}$$

$$= \frac{(1.2+0.8+0.7)[(1.2)^2 + (0.8)^2 + (0.7)^2 - 0.96 - 0.84 - 0.56]}{(1.35)[(1.2)^2 + (0.8)^2 + (0.7)^2 - 0.96 - 0.84 - 0.56]}$$

$$= \frac{2.7}{1.35} = 2$$

**OR**

Suppose, 1.2 = $a$ ; 0.8 = $b$ and 0.7 = $c$
$\therefore$ Expression

$$= \frac{a^3 + b^3 + c^3 - 3abc}{1.35[a^2 + b^2 + c^2 - ab - ac - bc]}$$

$$= \frac{(a+b+c)(a^2 + b^2 + c^2 - ab - ac - bc)}{1.35\ [a^2 + b^2 + c^2 - ab - ac - bc]}$$

$$= \frac{a+b+c}{1.35} = \frac{1.2 + 0.8 + 0.7}{1.35}$$

$$= \frac{2.7}{1.35} = 2$$

**5.** (4) $7^1 = 7$ ; $7^2 = 49$, $7^3 = 343$, $7^4 = 2407$ ; $7^5 = 1680$
$2^1 = 2$ ; $2^2 = 4$ ; $2^3 = 8$ ; $2^4 = 16$ ; $2^5 = 32$
Hence, after index 4, the unit's digit repeats itself.
In the expansion of $4^n$ and $9^n$, the unit's digit repeat itself after index 2
$\therefore$ Unit's digit in the expansion of $(217)^{413}$
Unit's digit in the expansion of $(217)^1 = 7$
[413 ÷ 4 ⇒ Remainder = 1]
Unit's digit in the expanion of $(342)^{812} = 6$
Unit's digit in the expansion of $(819)^{547} = 9$
[$\because$ 547 ÷ 2 ⇒Remainder = 1]
Unit's digit in the expansion of $(414)^{624} = 6$
$\therefore$ Required unit's digit = Unit's digit in (7 × 6 × 9 × 6) = 8

**OR**

$2^5$ gives unit digit 2
$4^3$ gives unit digit 4
$7^4$ gives unit digit 1
$9^2$ gives unit digit 1
$\Rightarrow (217)^{4\times103}\ (217) \times (819)^{2\times273}\ (819) \times (414)^{3\times208} \times (342)^{5\times162}\ (342)^2$
1 × 7 × 1 × 9 × 4 × 2 × 4
8

**6.** (2) Expression

$$= \left(\frac{1}{1\times3\times5} + \frac{1}{3\times5\times7} + \ldots + \frac{1}{19\times21\times23}\right)$$

$$+ \left(\frac{1}{1\times4} + \frac{1}{4\times7} + \frac{1}{7\times10} + \ldots\ldots \frac{1}{28\times31}\right)$$

[$n$th term of first series

$$= \frac{1}{(2r-1)(2r+1)(2r+3)};$$

10th term of 1, 4, 7.....
= $a + (n - 1)\ d$ = 1 + 9 × 3 = 28]
Now,

$$\frac{1}{1\times3\times5} + \frac{1}{3\times5\times7} + \frac{1}{5\times7\times9} \ldots\ldots \frac{1}{19\times21\times23}$$

$$= \frac{1}{4}\left(\frac{1}{1\times3} - \frac{1}{3\times5}\right) + \frac{1}{4}\left(\frac{1}{3\times5} - \frac{1}{5\times7}\right) + \frac{1}{4}\left(\frac{1}{5\times7} - \frac{1}{7\times9}\right) + \ldots\ldots\ldots + \frac{1}{4}\left(\frac{1}{19\times21} - \frac{1}{21\times23}\right)$$

$$= \frac{1}{4\times3} - \frac{1}{4\times21\times23}$$

$$= \frac{483-3}{12\times21\times23} = \frac{480}{12\times21\times23}$$

Again,

$$\frac{1}{1\times4} + \frac{1}{4\times7} + \frac{1}{7\times10} + \ldots. + \frac{1}{28\times31}$$

$$= \frac{1}{3}\left(1 - \frac{1}{4}\right) + \frac{1}{3}\left(\frac{1}{4} - \frac{1}{7}\right) + \ldots + \frac{1}{3}\left(\frac{1}{28} - \frac{1}{31}\right)$$

$= \frac{1}{3} - \frac{1}{3 \times 31} = \frac{31-1}{3 \times 31}$

$= \frac{30}{93} = \frac{10}{31}$

$\therefore$ Required sum

$= \frac{480}{12 \times 21 \times 23} + \frac{10}{31}$

$= \frac{14880 + 57960}{12 \times 21 \times 23 \times 31}$

$= \frac{723840}{12 \times 21 \times 23 \times 31} = \frac{6070}{14973}$

**7.** (3) LCM of the orders of surds = LCM of 3, 4 and 2 = 12

$\therefore \sqrt[3]{12} = (12)^{\frac{1}{3}} = (12)^{\frac{4}{12}}$

$= \sqrt[12]{12^4} = \sqrt[12]{20736}$

$\sqrt[4]{29} = \sqrt[12]{29^3} = \sqrt[12]{24389}$

$\sqrt{5} = \sqrt[12]{5^6} = \sqrt[12]{15625}$

Clearly,

$\sqrt{5} < \sqrt[3]{12} < \sqrt[4]{29}$

$\therefore \frac{1}{\sqrt{5}} > \frac{1}{\sqrt[3]{12}} > \frac{1}{\sqrt[4]{29}}$

**8.** (1) LCM of 3, 4 and 6 = 12
Here, divisor corresponding remainder = 2
$\therefore$ Required number (N) = Multiple of 12 – 2
= 96 – 2 = 94
$\therefore$ 94 ÷ 5 gives remainder = 4

**OR**

94 is the largest digit which when divided by 3, 4 and 6 will leave remainder 1, 2 and 4. When this number is divided by 5 Remainder = 4

**9.** (3) LCM of orders 3, 2 and 4 of surds = 12

$\therefore \sqrt[3]{11} = \sqrt[12]{(11)^4} = \sqrt[12]{14641}$

$\sqrt{7} = \sqrt[12]{(7)^6} = \sqrt[12]{117649}$

$\sqrt[4]{45} = \sqrt[12]{(45)^3} = \sqrt[12]{91125}$

Clearly,

$\sqrt[12]{117649} > \sqrt[12]{91125} > \sqrt[12]{14641}$

$\therefore \sqrt{7} > \sqrt[4]{45} > \sqrt[3]{11}$

**10.** (3) A + B + AB = 65 = 15 + 50
$\Rightarrow$ A + B + AB = 10 + 5 + 10 × 5
$\therefore$ A – B = 10 – 5 = 5

**OR**

Here, A + B + AB = 65 (A, B $\leq$ 15)
Let A = 10, B = 5
[$\because$ 10 + 5 + 10 × 5 = 65]
$\Rightarrow$ A – B = (10 –5) = 5

**11.** (4) $1^3 + 2^3 + 3^3 + .... + n^3$

$= \left(\frac{n(n+1)}{2}\right)^2$

$\therefore 14^3 + 16^3 + 18^3 + ..... + 30^3$
$2^3 (7^3 + 8^3 + 9^3 + .....+15^3)$
$= 8 [(1^3 + 2^3 + ....+15)^3 - (1^3 + 2^3 + ... +6^3)]$

$= 8\left[\left(\frac{15 \times 16}{2}\right)^2 - \left(\frac{6 \times 7}{2}\right)^2\right]$

$= 8\left[(15 \times 8)^2 - (3 \times 7)^2\right]$

= 8 (14400 – 441) = 8 × 13959
= 111672

**12.** (2) Expression

$= \sqrt{4600 + \sqrt{540 + \sqrt{1280 + \sqrt{250 + 6}}}}$

$= \sqrt{4600 + \sqrt{540 + \sqrt{1280 + 16}}}$

$= \sqrt{4600 + \sqrt{540 + \sqrt{1296}}}$

$= \sqrt{4600 + \sqrt{540 + 36}}$

$= \sqrt{4600 + \sqrt{576}}$

$= \sqrt{4600 + 24} = \sqrt{4624} = 68$

**13.** (1) $x + y + z = 0$
$\Rightarrow x + z = -y$
Squaring on,
$x^2 + z^2 + 2xz = y^2$
$\Rightarrow x^2 + z^2 = y^2 - 2xz$

$\therefore \frac{3y^2 + x^2 + z^2}{2y^2 - xz}$

$= \frac{3y^2 + y^2 - 2xz}{2y^2 - xz} = \frac{4y^2 - 2xz}{2y^2 - xz}$

$= \frac{2(2y^2 - xz)}{2y^2 - xz} = 2$

**OR**

Here, $x + y + z = 0$
Let $x = 1$, $y = -1$, $z = 0$

$= \frac{3y^2 + x^2 + z^2}{(2y^2 - xz)} = \frac{3.(-1)^2 + (1)^2 + 0^2}{[2(-1)^2 - 1 \times 0]}$

$= \frac{3+1}{2} = \frac{4}{2} = 2$

**14.** (2) $P = 7 + 4\sqrt{3}$

$\therefore \frac{1}{P} = \frac{1}{7 + 4\sqrt{3}} = \frac{7 - 4\sqrt{3}}{(7 + 4\sqrt{3})(7 - 4\sqrt{3})}$

Rationalising the denominator $= \frac{7 - 4\sqrt{3}}{49 - 48} = 7 - 4\sqrt{3}$

$\because$ PQ = 1

$\therefore Q = \frac{1}{P} = 7 - 4\sqrt{3}$

$\therefore \frac{1}{Q} = \frac{1}{7 - 4\sqrt{3}}$

$= \frac{7 + 4\sqrt{3}}{(7 - 4\sqrt{3})(7 + 4\sqrt{3})}$

$= 7 + 4\sqrt{3}$

$\therefore \frac{1}{P^2} + \frac{1}{Q^2}$

$= (7 - 4\sqrt{3})^2 + (7 + 4\sqrt{3})^2$

$= 2\left[(7)^2 + (4\sqrt{3})^2\right]$

= 2 (49 + 48) = 2 × 97 = 194

**15.** (3) $a^3 + 3a^2 + 9a = 81$
when $a = 3$
L.H.S = 27 + 27 + 27 = 81

$\therefore a^3 + \frac{3}{a} = (3)^3 + \frac{3}{3}$

= 27 + 1 = 28

**16.** (4) $x^3 + y^3 + z^3 - 3xyz$
$= (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$
$\Rightarrow x^3 + y^3 + z^3 - 3xyz$
$= (x + y + z)\{(x + y + z)^2 - 3(xy + yz + zx)\}$
$\Rightarrow 13 - 3 \times 1 = 1\{1 - 3(xy + yz + zx)\}$
$\Rightarrow 10 = 1 - 3(xy + yz + zx)$
$\Rightarrow 3(xy + yz + zx)$
$= 1 - 10 = -9$

$\therefore xy + yz + zx = \frac{-9}{3} = -3$

**17.** (4) $\frac{a+b}{c} = \frac{6}{5}$

$\Rightarrow \frac{a+b+c}{c} = \frac{6+5}{5} = \frac{11}{5}$

$\Rightarrow a + b + c = 11k$
$c = 5k$

Again, $\frac{b+c+a}{a} = \frac{11}{2}$

$\Rightarrow a = 2k$

$\therefore a + b + c = 11k$

$\Rightarrow 2k + b + 5k = 11k$

$\Rightarrow b = 11k - 7k = 4k$

$\therefore \frac{a+c}{b} = \frac{2k+5k}{4k} = \frac{7}{4}$

**18.** (3) $P + Q + R = y + z - x + z + x - y + x + y - z = x + y + z$

$P - Q = y + z - x - z - x + y = 2(y - x)$

$Q - R = z + x - y - x - y + z = 2(z - y)$

$R - P = x + y - z - y - z + x = 2(x - z)$

$\therefore P^3 + Q^3 + R^3 - 3PQR$

$= \frac{1}{2}(P + Q + R)[(P - Q)^2 + (Q - R)^2 + (R - P)^2]$

$= \frac{1}{2}(x + y + z)[4(y - x)^2 + 4(z - y)^2 + 4(x - z)^2]$

$= 4 \times \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$

$= 4 \times (x^3 + y^3 + z^3 - 3xyz)$

$= 4 \times 3 = 12$

**19.** (2) Expression

$= \frac{1}{2+x_1} + \frac{1}{2+x_2} + \frac{1}{2+x_3}$

$= \frac{(2+x_2)(2+x_3) + (2+x_1)(2+x_3) + (2+x_1)(2+x_2)}{(2+x_1)(2+x_2)(2+x_3)}$

$= \frac{4 + 2x_2 + 2x_3 + x_2x_3 + 4 + 2x_1 + 2x_3 + x_1x_3 + 4 + 2x_1 + 2x_2 + x_1x_2}{(4 + 2x_1 + 2x_2 + x_1x_2)(2 + x_3)}$

$= \frac{12 + 4x_1 + 4x_2 + 4x_3 + x_1x_2 + x_2x_3 + x_3x_1}{8 + 4x_1 + 4x_2 + 2x_1x_2 + 4x_3 + 2x_1x_3 + 2x_2x_3 + x_1x_2x_3}$

$= \frac{x_1x_2x_3 - 16 + 12 + x_1x_2 + x_2x_3 + x_1 + x_3x_1}{x_1x_2x_3 - 16 + 8 + 2x_1x_2 + 2x_1x_3 + 2x_2x_3 + x_1x_2x_3}$

$= \frac{x_1x_2 + x_2x_3 + x_3x_1 + x_1x_2x_3 - 4}{2(x_1x_2 + x_1x_3 + x_2x_3 + x_1x_2x_3 - 8)}$

$= \frac{1}{2}$

**20.** (1) $x^2 - x + 1 = 0$

$\therefore \alpha = -\omega$ or $\beta = -\omega^2$

$[1 + \omega + \omega^2 = 0;\ \omega^3 = 1]$

$\therefore \alpha^3 + \beta^3 = -\omega^3 - \omega^6$

$= -1 - 1 = -2$

$\alpha^3 \times \beta^3 = -\omega^3 \times -\omega^6 = \omega^9 = 1$

$\therefore$ Required equation is :

$x^2 + 2x + 1 = 0$

**21.** (3) $3x + 5y + 7z = 49$ ...(i)

$9x + 8y + 21z = 126$ ...(ii)

By equation (i) × 3 – (ii),

$9x + 15y + 21z = 147$

$\underset{-}{9x} + \underset{-}{8y} \ \underset{-}{+21z} = \underset{-}{126}$

$7y = 21$

$\Rightarrow y = \frac{21}{7} = 3$

**22.** (2) C.P of 1 pen = Rs. $x$

C.P of 1 notebook = Rs. $y$

C.P of 1 file = Rs. $z$

$\therefore 4x + 6y + 9z = 305$ ...(i)

$3x + 4y + 2z = 145$ ...(ii)

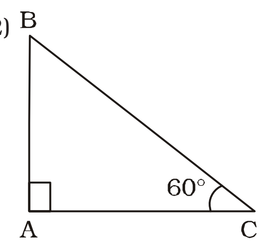
By equation (i) × 2 – (ii),

$8x + 12y + 18z = 610$

$\underset{-}{3x} + \underset{-}{4y} \ \underset{-}{+2z} = \underset{-}{145}$

$5x + 8y + 16z =$ Rs. 465

**23.** (2)




Suppose, AC = $x$ units

$\therefore \tan 60° = \frac{AB}{AC}$

$\Rightarrow \sqrt{3} = \frac{AB}{x} \Rightarrow AB\ \sqrt{3}x$ units

$\cos 60° = \frac{AC}{BC}$

$\Rightarrow \frac{1}{2} = \frac{x}{BC}$

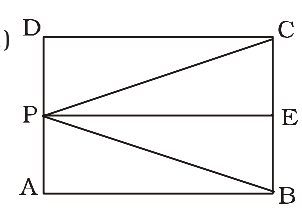
$\Rightarrow BC = 2x$ units

$\therefore$ Circum-radius = $x$ units

$\therefore$ Circum-radius : AB

$= x : \sqrt{3x} = 1 : \sqrt{3}$

**24.** (1)




The value of BP + CP will be minimum if BP = CP

PE ⊥ BC

$\therefore$ CE = EB = 2 cm.

From ΔCPE,

$CP = \sqrt{CE^2 + PE^2}$

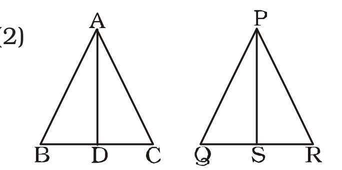
$= \sqrt{2^2 + 4^2} = \sqrt{4 + 16} = \sqrt{20}$

$= 2\sqrt{5}$ cm. = BP

$\therefore$ Required answer

$= 2 \times 2\sqrt{5} = 4\sqrt{5}$ cm.

**25.** (2)

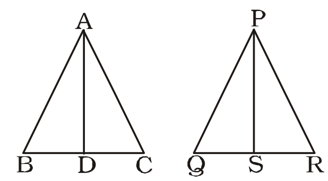



ΔABC ~ ΔPQR

$\therefore \frac{AB}{PQ} = \frac{BC}{QR} = \frac{2}{3}$

$\therefore \frac{2BD}{2QS} = \frac{2}{3} \Rightarrow \left(\frac{BD}{QS}\right)^2 = \frac{4}{9}$

**OR**




AB : PQ = 2 : 3

$\frac{AB^2}{PQ^2} = \frac{BC^2}{QR^2}$

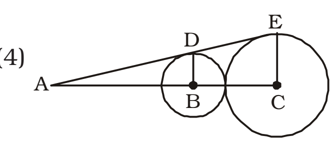
(as ΔABC ~ ΔPQR)

$\Rightarrow \frac{AB^2}{PQ^2} = \left(\frac{2BD}{2QS}\right)^2$

$\left(\frac{2}{3}\right)^2 = \frac{BD^2}{QS^2}$

$\Rightarrow \frac{BD^2}{QS^2} = \frac{4}{9}$

**26.** (4)




Radius of larger circle

= $5x$ units

Radius of smaller circle

= $3x$ units

DE =

$\sqrt{(\text{Distance between centres})^2 - (r_1 - r_2)^2}$

$= \sqrt{(8x)^2 - (5x - 3x)^2}$

$= \sqrt{64x^2 - 4x^2} = \sqrt{60x^2}$

$= 2\sqrt{15}x$ units ...(i)

$\angle ADB = \angle AEC = 90°$

$\angle ABD = \angle ACE$

$\Delta ABD \sim \Delta ACE$

$\therefore \frac{BD}{CE} = \frac{AB}{AC}$

$\Rightarrow \frac{3}{5} = \frac{40 - 8x}{40}$

$\Rightarrow \frac{3}{1} = \frac{40 - 8x}{8}$

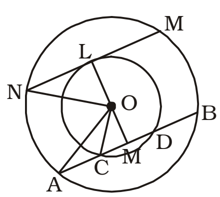
$\Rightarrow 24 = 40 - 8x$

$\Rightarrow 8x = 40 - 24 = 16$

$\Rightarrow x = 2$

$\therefore$ DE $= 4\sqrt{15}$ Units

**27.** (1)




CD = 24 cm.

OM $\perp$ CD; OL $\perp$ MN

$\therefore$ CM = MD = 12 cm.

OC = $r$ cm., OA = R cm.

$\therefore$ OM $= \sqrt{OC^2 - CM^2}$

$= \sqrt{r^2 - 12^2}$

Again,

OM $= \sqrt{OA^2 - AM^2}$

$= \sqrt{R^2 - 15^2}$

$\therefore \sqrt{r^2 - 12^2} = \sqrt{R^2 - 15^2}$

$\Rightarrow r^2 - 144 = R^2 - 225$

$\Rightarrow R^2 - r^2 = 225 - 144$

$\Rightarrow R^2 - r^2 = 81$ ...(i)

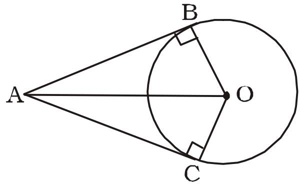
Now in $\Delta$ OLN,

NL $= \sqrt{ON^2 - OL^2}$

$= \sqrt{R^2 - r^2} = \sqrt{81} = 9$ cm.

$\therefore$ MN = 2 × NL = 18 cm.

**28.** (1)




$\angle BAC = 60° \therefore \angle BAO = 30°$

In $\Delta$ OAB,

$\therefore \tan\theta = \frac{OB}{AB}$

$\Rightarrow \tan 30° = \frac{6}{AB}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{6}{AB}$

$\Rightarrow$ AB $= 6\sqrt{3}$ cm. = AC

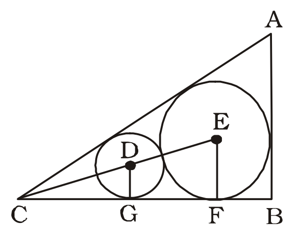
$\therefore \sqrt{AB^2 + AC^2}$

$= \sqrt{(6\sqrt{3})^2 + (6\sqrt{3})^2}$

$= \sqrt{108 + 108} = \sqrt{216}$

$= 6\sqrt{6}$ cm.

**29.** (2)




DG = 2 cm.

$\angle DCG = 30°$

$\sin 30° = \frac{DG}{CD}$

$\Rightarrow \frac{1}{2} = \frac{2}{CD}$

$\Rightarrow$ CD = 4 cm.

$\angle CGD = \angle CFE$

$\angle CDG = \angle CEF$

$\Delta CGD \sim \Delta CFE$

$\therefore \frac{DG}{EF} = \frac{CD}{CE}$

$\Rightarrow \frac{2}{x} = \frac{4}{4 + 2 + x}$

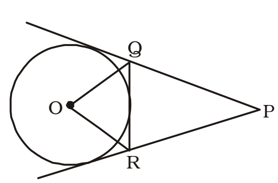
where EF = $x$ cm.

$\Rightarrow \frac{1}{x} = \frac{2}{6 + x}$

$\Rightarrow 2x = 6 + x$

$\Rightarrow x = 6$ cm.

**30.** (1)




QP = PR $\therefore \angle PQR = \angle PRQ$

$\because \angle QPR = 45°$

$\therefore \angle PQR = \frac{180° - 45°}{2} = 67.5°$

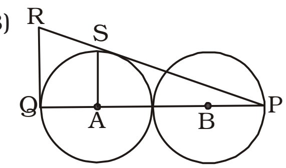
$\therefore \angle OQR = \frac{180° - 67.5°}{2}$

$= 56.25° = \angle ORQ$

$\therefore \angle QOR = 180° - 2 \times 56.25°$

$= 180° - 112.5° = 67.5°$

**31.** (3)




QP = 16 cm.

SA $\perp$ RP

$\therefore$ SP $= \sqrt{AP^2 - SA^2} = \sqrt{12^2 - 4^2}$

$= \sqrt{16 \times 8} = 8\sqrt{2}$ cm.

RQ = RS = $x$ cm.

$\therefore$ RP = $(x + 8\sqrt{2})$ cm.

In $\Delta$PQR,

$RP^2 = RQ^2 + QP^2$

$\Rightarrow (x + 8\sqrt{2})^2 = x^2 + 16^2$

$\Rightarrow x^2 + 16\sqrt{2}x + 128$

$= x^2 + 256$

$\Rightarrow 16\sqrt{2}x = 256 - 128 = 128$

$\Rightarrow x = \frac{128}{16\sqrt{2}} = 4\sqrt{2}$ cm.

**32.** (2) $r_1 = 4$ cm.

$r_2 = 3$ cm.

$\therefore$ Direct common tangent

$= \sqrt{(\text{Distance between centers})^2 - (r_1 - r_2)^2}$

$= 10^2 - 1 = \sqrt{99}$ cm.

Transverse common tangent

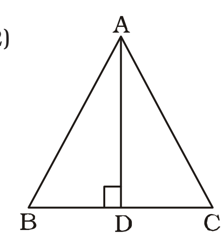
$= \sqrt{(\text{Distance between centre})^2 - (r_1 + r_2)^2}$

$= \sqrt{10^2 - 7^2} = \sqrt{17 \times 3}$ cm.

$\therefore$ Required ratio

$= \sqrt{99} : \sqrt{17 \times 3} = \sqrt{33} : \sqrt{17}$

**33.** (2)




BD = $x$ cm. $\therefore$ CD = $(8 - x)$ cm.

$\therefore AD^2 = AB^2 - BD^2$

$= AC^2 - CD^2$

$\therefore AD^2 = 5^2 - x^2$

$= \left(\sqrt{41}\right)^2 - (8 - x)^2$

$\Rightarrow 25 - x^2 = 41 - (64 - 16x + x^2)$

$\Rightarrow 25 - x^2 = 41 - 64 + 16x - x^2$

$\Rightarrow 25 = -23 + 16x$

$\Rightarrow 16x = 48$

$\Rightarrow x = \frac{48}{16} = 3$ cm.

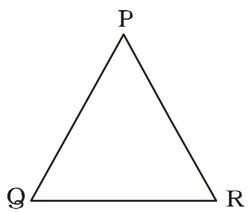
$\therefore$ AD = $\sqrt{25 - x^2} = \sqrt{25 - 9}$

$= \sqrt{16} = 4$ cm.

$\therefore$ Area of $\Delta$ABD = $\frac{1}{2}$ × BD × AD

$= \frac{1}{2} \times 3 \times 4 = 6$ Sq. cm.

**34.** (3)




PQ = PR = 10 cm; QR = 8 cm.

$\therefore \angle PQR = \angle PRQ$

$\cos Q = \frac{PQ^2 + QR^2 - PR^2}{2 \times PQ \times QR}$

$= \frac{10^2 + 8^2 - 10^2}{2 \times 10 \times 8}$

$= \frac{8 \times 8}{2 \times 10 \times 8} = \frac{2}{5}$

$\therefore \sin Q = \sqrt{1 - \cos^2 Q}$

$= \sqrt{1 - \frac{4}{25}} = \frac{\sqrt{21}}{5} = \sin R$

$\cos P = \frac{PQ^2 + PR^2 - QR^2}{2 \times PQ \times PR}$

$= \frac{10^2 + 10^2 - 8^2}{2 \times 10 \times 10} = \frac{200 - 64}{200}$

$= \frac{136}{200} = \frac{68}{100} = \frac{17}{25}$

$\therefore \sin P = \sqrt{1 = \cos^2 P}$

$= \sqrt{1 - \frac{289}{625}} = \sqrt{\frac{336}{625}} = \frac{4\sqrt{21}}{25}$

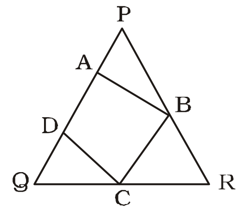
$\therefore$ Area of $\Delta$ PQR

$= \frac{1}{4} \times QR \times \sqrt{4PQ^2 - QR^2}$

$= \frac{1}{4} \times 8 \times \sqrt{4 \times 100 - 64}$

$= 2\sqrt{400 - 64} = 2\sqrt{336}$

$= 8\sqrt{21}$ sq. cm.




$\therefore$ Area of $\Delta$DQC

$= \frac{1}{2}$ DQ × QC sinQ

$= \frac{1}{2} \times 2 \times 5 \times \frac{\sqrt{21}}{5}$

$= \sqrt{21}$ sq. cm.

Area of $\Delta$BCR = $\frac{1}{2}$ × BR × CR sinR

$= \frac{1}{2} \times 4 \times 3 \times \frac{\sqrt{21}}{5}$

$= \frac{6\sqrt{21}}{5}$ sq. cm.

Area of $\Delta$APB

$= \frac{1}{2}$ × AP × PB × sin P

$= \frac{1}{2} \times 5 \times 6 \times \frac{4\sqrt{21}}{25}$

$= \frac{12\sqrt{21}}{5}$ sq. cm

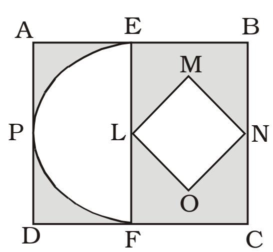
$\therefore$ Area of quadrilateral ABCD

$= \left(8\sqrt{21} - \sqrt{21} - \frac{6\sqrt{21}}{5} - \frac{12\sqrt{21}}{5}\right)$ sq. cm.

$= \left(\frac{35\sqrt{21} - 6\sqrt{21} - 12\sqrt{21}}{5}\right)$ sq. cm.

$= \frac{17\sqrt{21}}{5}$ sq. cm.

**35.** (2)




Area of square ABCD
= 14 × 14 = 196 sq. cm.
Radius of semi-circle = 7 cm.

$\therefore$ Its area = $\frac{\pi r^2}{2} = \frac{22}{14} \times 7 \times 7$

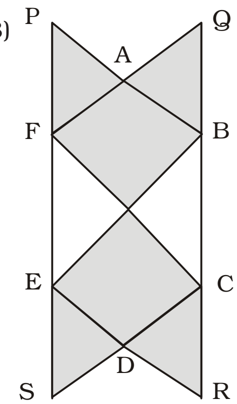
= 77 sq. cm.
Diagonal of square LMNO
= 7 cm.

Its side = $\frac{7}{\sqrt{2}}$ cm.

Its area = $\frac{7 \times 7}{\sqrt{2} \times \sqrt{2}} = \frac{49}{2}$

= 24.5 sq. cm.
$\therefore$ Area of shaded region
= (196 – 77 – 24.5) sq. cm.
= 94.5 sq. cm.

**36.** (3)




Area of each equilateral triangle = $\frac{\sqrt{3}}{4}$ × side²

$= \frac{\sqrt{3}}{4} \times 6 \times 6 = 9\sqrt{3}$ sq. cm.

Area of regular polygon ABCDEF = $6 \times 9\sqrt{3}$ sq. cm.

$= 54\sqrt{3}$ sq. cm.

Area of four equilateral triangles APF, ABQ, DES and CDR

$= 4 \times 9\sqrt{3}$ sq. cm.

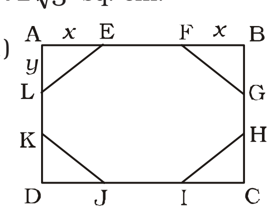
$= 36\sqrt{3}$ sq cm

$\therefore$ Area of shaded region

$= \left(54\sqrt{3} + 36\sqrt{3} - 2 \times 9\sqrt{3}\right)$ sq. cm.

$= 72\sqrt{3}$ sq. cm.

**37.** (1)



AE = $x$ cm.
AL = $y$ cm.

$\therefore$ EL = $\sqrt{x^2 + y^2}$ cm.

$\therefore$ AB = $2x + \sqrt{x^2 + y^2}$ cm.

AD = $2y + \sqrt{x^2 + y^2}$ cm.

$\therefore$ $2x + \sqrt{x^2 + y^2} = 8$

$\Rightarrow \sqrt{x^2 + y^2} = 8 - 2x$ ...(i)

$2y + \sqrt{x^2 + y^2} = 6$

$\Rightarrow \sqrt{x^2 + y^2} = 6 - 2y$ ...(ii)

$\therefore$ $8 - 2x = 6 - 2y$
$\Rightarrow 2x - 2y = 8 - 6$
$\Rightarrow x - y = 1$
$\Rightarrow y = x - 1$
From equation (i),
$x^2 + y^2 = (8 - 2x)^2$
$\Rightarrow x^2 + (x - 1)^2 = 64 - 32x + 4x^2$
$\Rightarrow x^2 + x^2 - 2x + 1$
$= 64 - 32x + 4x^2$
$\Rightarrow 2x^2 - 30x + 63 = 0$

$\Rightarrow x = \dfrac{30 \pm \sqrt{900 - 4 \times 2 \times 63}}{4}$

$\left[\begin{array}{l} \because ax^2 + bx + c = 0 \\ \Rightarrow x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a} \end{array}\right]$

$= \dfrac{30 \pm \sqrt{900 - 504}}{4}$

$= \dfrac{30 \pm \sqrt{396}}{4} = \dfrac{30 \pm 6\sqrt{11}}{4}$

$= \dfrac{15 \pm 3\sqrt{11}}{4}$

$\therefore$ $x = \dfrac{15 - 3\sqrt{11}}{2} < 8$

$\therefore$ $y = \dfrac{15 - 3\sqrt{11}}{2} - 1$

$= \dfrac{13 - 3\sqrt{11}}{2}$

$\therefore$ $\sqrt{x^2 + y^2}$

$= \sqrt{\left(\dfrac{15 - 3\sqrt{11}}{2}\right)^2 + \left(\dfrac{13 - 3\sqrt{11}}{2}\right)^2}$

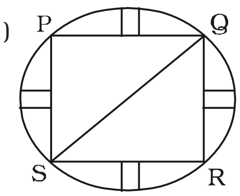
$= \sqrt{\dfrac{225 - 90\sqrt{11} + 99 + 169 + 99 - 78\sqrt{11}}{4}}$

$= \sqrt{\dfrac{592 - 168\sqrt{11}}{4}} = \sqrt{148 - 42\sqrt{11}}$

$= \sqrt{99 + 49 - 2 \times 7 \times \sqrt{99}}$

$= \left(3\sqrt{11} - 7\right)^2 = \left(3\sqrt{11} - 7\right)$ cm.

**38.** (1)



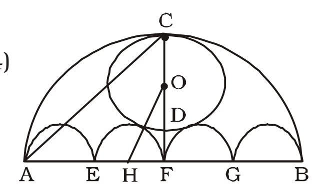

SQ = Diagoanl of square = Diameter of circle = $28\sqrt{2}$ cm.
$\therefore$ Side of square = 28 cm.
$\therefore$ Side of smaller square

$\approx \dfrac{1}{2}\left(28\sqrt{2} - 28\right)$

$\approx \dfrac{1}{2} \times 28\left(\sqrt{2} - 1\right)$

$\approx 14 \times 1.4 = 5.6$ cm.
$\therefore$ Area of each smaller square = $(5.6)^2$ sq. cm.
= 31.36 sq. cm.

**39.** (4)




AE = EF = 14 cm.
AF = 28 cm.
FC = 28 cm.
CO = R, CD = 2R; FD = $x$ cm.
$\Rightarrow 2R + x = 28$ cm.
$OH^2 = HF^2 + OF^2$
$\Rightarrow (7 + R)^2 = 7^2 + (R + x)^2$
$\Rightarrow (7 + R)^2 - (R + x)^2 = 49$
$\Rightarrow (7 + 2R + x)(7 + R - R - x)$
$= 49$
$\Rightarrow (7 + 28)(7 - x) = 49$

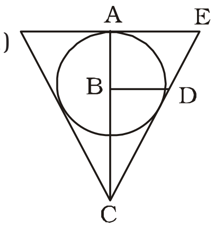
$\Rightarrow 7 - x = \dfrac{49}{35} = \dfrac{7}{5}$

$\Rightarrow x = 7 - \dfrac{7}{5} = \dfrac{28}{5} = 5.6$ cm.

$\therefore$ $2R + x = 28$
$\Rightarrow 2R = 28 - 5.6 = 22.4$
$\Rightarrow R = 11.2$ cm.
$\therefore$ Area of shaded circle
= 394.24 sq. cm.

**40.** (*) Volume of prism = Area of base × height
$\therefore$ All three have equal volumes.

**41.** (1)




CE = $\sqrt{AC^2 + AE^2}$

$= \sqrt{15^2 + 8^2} = \sqrt{225 + 64}$

$= \sqrt{289} = 17$ cm.
$\angle CAE = \angle CDB = 90°$
$\angle ACE$ is common
$\therefore$ $\Delta CBD \sim \Delta CEA$

$\therefore$ $\dfrac{CB}{BD} = \dfrac{CE}{AE}$

$\Rightarrow \dfrac{15 - r}{r} = \dfrac{17}{8}$

$\Rightarrow 17r = 120 - 8r$
$\Rightarrow 25r = 120$

$\Rightarrow r = \dfrac{120}{25} = \dfrac{24}{5}$ cm.

$\therefore$ Required ratio = $8 : \dfrac{24}{5}$

= 5 : 3

**42.** (2) Radius of cylinder = $r$ cm.
Its height = $h$ cm.
According to the question,

$\dfrac{2\pi rh}{2\pi r^2} = \dfrac{2}{1}$

$\Rightarrow \dfrac{h}{r} = \dfrac{2}{1}$ ...(i)

Again,
$\Rightarrow 2\pi rh + 2\pi r^2 = 23100$
$\Rightarrow 2\pi r(h + r) = 23100$
$\Rightarrow 2\pi r(2r + r) = 23100$
$\Rightarrow 6\pi r^2 = 23100$

$\Rightarrow r^2 = \dfrac{23100 \times 7}{6 \times 22} = 1225$

$\Rightarrow r = \sqrt{1225} = 35$ cm.
$\therefore$ $h = 70$ cm.
$\therefore$ Volume of cylinder = $\pi r^2 h$

$= \left(\dfrac{22}{7} \times 35 \times 35 \times 70\right)$ cu. cm.

= 269500 cu. cm.

**43.** (2) Radius of each smaller cylinder = 3.5 cm.
Curved surface area of 8 smaller cylinders

$= 16\,\pi rh = 16 \times \dfrac{22}{7} \times 3.5 \times 5$

= 880 sq. cm.

Area of 8 bases

$= 8 \times \frac{22}{7} \times 3.5 \times 3.5$

= 308 sq. cm.

Area of the remaining part of base of larger cylinder

$= \left(\frac{22}{7} \times 14 \times 14 - 154\right) \times 2$

$= (616 - 154) \times 2 = 924$ sq. cm.

Curved surface area of larger cylinder $= 2 \times \frac{22}{7} \times 14 \times 15$

= 1320 sq. cm.

∴ Required answer

= (880 + 308 + 924 +1320) sq. cm.

= 3432 sq. cm.

**44.** (4) Volume of 10 smaller spherical balls

$= 10 \times \frac{4}{3} \times \pi \times 3 \times 3 \times 3$

$= 360\pi$ cu. cm.

Volume of remaining metal

$= \frac{360\pi \times 80}{100} = 288\pi$ cu. cm.

$\therefore \frac{4}{3}\pi R^3 = 288\pi$

$\Rightarrow R^3 = \frac{288 \times 3}{4}$

$= 72 \times 3 = 216$

$\Rightarrow R = \sqrt[3]{216} = 6$ cm.

**45.** (1) Volume of cylinder $= \pi r^2 h$

$= \frac{22}{7} \times 7^2 \times 21$

$= 22 \times 147$ cu. cm.

Volume of each smaller bullet = Volume of hemi spherical part + Volume of cylinder

$= \frac{2}{3}\pi r_1^3 + \pi r_1^2 h_1$

$= \left(\frac{2}{3} \times \frac{22}{7} \times 2.1 \times 2.1 \times 2.1 + \frac{22}{7} \times 2.1 \times 2.1 \times 1.4\right)$ cu. cm.

= 19.404 + 19.404) cu. cm.

= 38.8 cu. cm.

∴ Number of bullets

$= \frac{22 \times 147}{38.8} \approx 83$

**46.** (3) Surface area of cuboid

$= 2(l \times b \times b \times h + h \times l)$

= 2 (50 × 40 + 40 × 30 + 30 × 50)

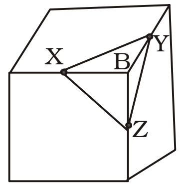
= 2 (2000 + 1200 + 1500)

= 2 × 4700 = 9400 sq. cm.

∴ Total surface area of 8 identical parts = (2 × 9400) sq. cm.

= 18800 sq. cm.

**47.** (4)




XY = YZ = ZX

$= \sqrt{8^2 + 8^2} = 8\sqrt{2}$ cm.

$\therefore$ Area of base $= \frac{\sqrt{3}}{4} \times (\text{side})^2$

$= \frac{\sqrt{3}}{4} \times \left(8\sqrt{2}\right)^2$

$= \frac{\sqrt{3}}{4}\left(8\sqrt{2}\right) \times \left(8\sqrt{2}\right)$

$= 32\sqrt{3}$ sq. cm.

Slant height of pyramid

$= \sqrt{8^2 - (4\sqrt{2})^2} = \sqrt{64 - 32}$

$= \sqrt{32} = 4\sqrt{2}$ cm.

∴ Area of lateral

$= \frac{1}{2} \times$ perimeter of base × slant height $= \frac{1}{2} \times 3 \times 8\sqrt{2} \times 4\sqrt{2}$

= 96 sq. cm.

∴ Toatal surface area

$= 96 + 32\sqrt{3}$

$= 32\left(3 + \sqrt{3}\right)$ sq. cm.

**48.** (2) Expression

$= \frac{(\sin x + \sin y)(\sin x - \sin y)}{(\cos x + \cos y)(\cos y - \cos x)}$

$= \frac{\sin^2 x - \sin^2 y}{\cos^2 y - \cos^2 x}$

$= \frac{\sin^2 x - \sin^2 y}{1 - \sin^2 y - 1 + \sin^2 x}$

$= \frac{\sin^2 x - \sin^2 y}{\sin^2 x - \sin^2 y} = 1$

$[\because \sin^2 x + \cos^2 x = 1]$

**49.** (2) Expression

$= \frac{\tan 5\theta + \tan 3\theta}{4\cos 4\theta\,(\tan 5\theta - \tan 3\theta)}$

$= \frac{\frac{\sin 5\theta}{\cos 5\theta} + \frac{\sin 3\theta}{\cos 3\theta}}{4\cos 4\theta\left(\frac{\sin 5\theta}{\cos 5\theta} - \frac{\sin 3\theta}{\cos 3\theta}\right)}$

$= \frac{\sin 5\theta.\cos 3\theta + \cos 5\theta.\sin 3\theta}{4\cos 4\theta.(\sin 5\theta.\cos 3\theta - \sin 3\theta.\cos 5\theta)}$

$= \frac{\sin(5\theta + 3\theta)}{4\cos 4\theta.\sin(5\theta - 3\theta)}$

$= \frac{\sin 8\theta}{4.\cos 4\theta.\sin 2\theta} = \frac{2\sin 4\theta.\cos 4\theta}{4\cos 4\theta.\sin 2\theta}$

$[\therefore \sin 2\theta = 2\sin\theta.\cos\theta]$

$= \frac{\sin 4\theta}{2\sin 2\theta} = \frac{2\sin 2\theta.\cos 2\theta}{2\sin 2\theta}$

$= \cos 2\theta$

**50.** (1) Expression

$= \frac{4}{3}\cot^2\frac{\pi}{6} + 3\cos^2 150° - 4\,\text{cosec}^2 45° + 8\sin\frac{\pi}{2}$

$= \frac{4}{3} \times (\sqrt{3})^2 + 3 \times \left(-\frac{\sqrt{3}}{2}\right)^2 - 4(\sqrt{2})^2 + 8$

$= \frac{4}{3} \times 3 + \frac{3 \times 3}{4} - 4 \times 2 + 8$

$= \frac{12}{3} + \frac{9}{4} = \frac{48 + 27}{12}$

$= \frac{75}{12} = \frac{25}{4}$

**51.** (4) sin (B – C) cos (A – D)

= (sinB . cosC – cosB . sinC) (cosA . cosD + sinA . sinD)

= sinB . cosC . cosA . cosD + sinA . sinB . cosC . sinD – cosA . cosB . sinC . cosD – sinA . sinC . sinD . cosB sin(A – B). cos (C – D)

= (sinA . cosB – cosA sinB) (cosC . cosD + sinC . sinD)

= sinA . cosB . cosC . cosD + sinA . sinC . cosB . sinD – cosA . cosC sinB . cosD – cosA . sinB . sinC sinD sin (C – A) . cos (B – D)

= (sinC . cosA – cosC . sinA) (cosB . cosD + sinB . sinD)

= sinC . cosA . cosB . cosD + sinC cosA . sinB . sinD – cosC . sinA . cosB . cosD – sinB . sinD . cosC . sinA

∴ Expression = 0

**52.** (2) Expression

$$= \frac{4 \sin A (\cos^3 A) - 4 \cos A \sin^3 A}{\cos (90° + 4A)}$$

$$= \frac{4\sin A . \cos A (\cos^2 A - \sin^2 A)}{- \sin 4A}$$

$$= \frac{2. \sin 2A . \cos 2A}{-\sin 4A} = \frac{\sin 4A}{-\sin 4A} = -1$$

**53.** (2) Expression

$$= \cos\left(90° - \frac{\theta}{2}\right) . \cos\left(90° - \frac{9\theta}{2}\right)$$

$$+ \sin\left(90° - \frac{3\theta}{2}\right) . \sin\left(90° - \frac{13\theta}{2}\right)$$

$$= \sin\frac{\theta}{2} . \sin\frac{9\theta}{2} + \cos\frac{3\theta}{2} . \cos\frac{13\theta}{2}$$

$$= \frac{1}{2}\left(2\sin\frac{\theta}{2}.\sin\frac{9\theta}{2} + 2\cos\frac{13\theta}{2}.\cos\frac{3\theta}{2}\right)$$

$$= \frac{1}{2} (\cos 4\theta - \cos 5\theta + \cos 8\theta + \cos 5\theta)$$

[∴ sinA . sinB = cos (A – B) – cos (A + B) 2 cosA cosB = cos (A + B) + cos (A – B)]

$$= \frac{1}{2} (\cos 8\theta + \cos 4\theta)$$

$$= \frac{1}{2} \times 2 \cos \frac{8\theta + 4\theta}{2} . \cos \frac{8\theta - 4\theta}{2}$$

$= 2 \cos 6\theta . \cos 2\theta$

$$\left[\because \cos C + \cos D = 2\cos\frac{C+D}{2}.\cos\frac{C-D}{2}\right]$$

**54.** (2) Expression

$= [\tan^2 (90 - \theta) - \sin^2 (90 - \theta)] \text{cosec}^2 (90° - \theta)\cot^2 (90 - \theta)$

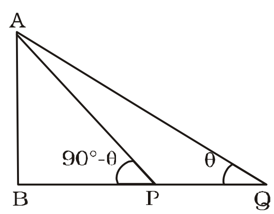
$= (\cot^2\theta - \cot^2\theta) . \sec^2\theta . \tan^2\theta$

$$= \left(\frac{\cos^2\theta}{\sin^2\theta} - \cos^2\theta\right) . \sec^2\theta . \tan^2\theta$$

$$= \cos^2\theta\left(\frac{1 - \sin^2\theta}{\sin^2\theta}\right) . \sec^2\theta . \tan^2\theta$$

$$= \frac{\cos^2\theta . \cos^2\theta}{\sin^2\theta} \times \frac{1}{\cos^2\theta} \times \frac{\sin^2\theta}{\cos^2\theta} = 1$$

**55.** (4)




AB = Height of building
= $h$ units
BP = $x$; BQ = $y$ units
$\angle AQB = \theta \therefore \angle APB = 90° - \theta$
In ΔABP,

$$\tan (90° - \theta) = \frac{AB}{BP}$$

$$\Rightarrow \cot\theta = \frac{h}{x} \quad \ldots(i)$$

In ΔABQ,

$$\tan\theta = \frac{AB}{BQ}$$

$$\Rightarrow \tan\theta = \frac{h}{y} \quad \ldots(ii)$$

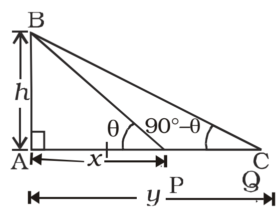
By equation (i) × (ii),

$$\cot\theta . \tan\theta = \frac{h}{x} \times \frac{h}{y}$$

$$\Rightarrow 1 = \frac{h^2}{xy} \Rightarrow h^2 = xy$$

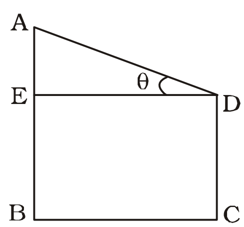
$$\Rightarrow h = \sqrt{xy} \text{ units}$$

**OR**




In such type of questions where two angles are complementory to each other then, height of building $\boxed{h = \sqrt{xy}}$

**56.** (4)




BE = CD = 35 metre
AE = 60 – 35 = 25 metre

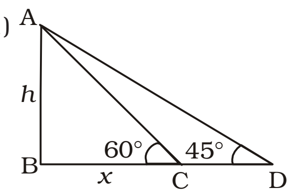
$$\angle \tan\theta = \frac{5}{9}$$

$$\therefore \tan\theta = \frac{AE}{DE}$$

$$\Rightarrow \frac{5}{9} = \frac{25}{DE}$$

$$\Rightarrow DE = \frac{25 \times 9}{5} = 45 \text{ metre}$$

**57.** (1)




$$CD = 4 \left(\sqrt{3} - 1\right) \times 60$$

$$= 240 \left(\sqrt{3} - 1\right) \text{ metre}$$

In ΔABC,

$$\tan 60° = \frac{AB}{BC}$$

$$\Rightarrow \sqrt{3} = \frac{h}{x} \Rightarrow h = \sqrt{3}\, x \text{ metre}$$

In Δ ABD,

$$\tan 45° = \frac{AB}{BD}$$

$$\Rightarrow 1 = \frac{h}{x + 240\left(\sqrt{3} - 1\right)}$$

$$\Rightarrow h = x + 240 \left(\sqrt{3} - 1\right)$$

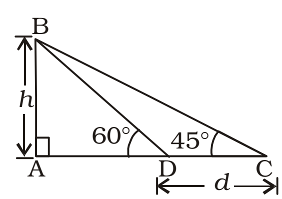
$$\Rightarrow h = \frac{h}{\sqrt{3}} + 240 \left(\sqrt{3} - 1\right)$$

$$\Rightarrow h - \frac{h}{\sqrt{3}} = 240 \left(\sqrt{3} - 1\right)$$

$$\Rightarrow \frac{\left(\sqrt{3} - 1\right) h}{\sqrt{3}} = 240 \left(\sqrt{3} - 1\right)$$

$$\Rightarrow h = 240\sqrt{3} \text{ metre}$$

**OR**




Distance moved in 1 minute

$$= 4 \left(\sqrt{3} - 1\right) \times 60$$

$$d = DC = 240 \left(\sqrt{3} - 1\right)$$

**Aliter – 1 :**
In ΔABD,

30° : 60° : 90°
1 : $\sqrt{3}$ : 2
AD : $h$ : BD

$\Rightarrow h = AD\sqrt{3}$

$AD = \dfrac{h}{\sqrt{3}}$

In $\Delta ABC$,

45° : 45° : 90°
1 : 1 : $\sqrt{2}$
$h$ : AB : BC

$\Rightarrow AC = h$

$AD + DC = h$

$$\frac{h}{\sqrt{3}} + 240\left(\sqrt{3}-1\right) = h$$

$$240\left(\sqrt{3}-1\right) = h - \frac{h}{\sqrt{3}}$$

$$240\left(\sqrt{3}-1\right) = h\,\frac{\left(\sqrt{3}-1\right)}{\sqrt{3}}$$

$$\Rightarrow \boxed{h = 240\sqrt{3}\text{ metre}}$$

**Aliter – 2 :**

Using relation

$d = h\,(\cot\theta_1 - \cot\theta_2)$

$\theta_1 < \theta_2$

$\Rightarrow 240\left(\sqrt{3}-1\right)$

$= h\,(\cot 45° - \cot 60°)$

$$240\left(\sqrt{3}-1\right) = h\left(1-\frac{1}{\sqrt{3}}\right)$$

$$\Rightarrow 240\left(\sqrt{3}-1\right) = h\left(\frac{\sqrt{3}-1}{\sqrt{3}}\right)$$

$$\Rightarrow \boxed{h = 240\sqrt{3}\text{ metre}}$$

**58.** (2) 15% of total applicants who were present at exam centre F

$= 1200000 \times \dfrac{15}{100} \times \dfrac{64}{100} \times \dfrac{15}{100}$

$= 17280$

Present applicants at exam centre K

$= 1200000 \times \dfrac{16}{100} \times \dfrac{80}{100}$

$= 153600$

$\therefore$ Required per cent

$= \dfrac{A}{B} \times 100 = \dfrac{17280}{153600} \times 100$

$= 11.25$

**59.** (2) Offline applicants :

Exam centre H

$\Rightarrow 1200000 \times \dfrac{20}{100} \times \dfrac{48}{100}$

$= 115200$

Exam centre K

$\Rightarrow 1200000 \times \dfrac{16}{100} \times \dfrac{62}{100}$

$= 119040$

Exam centre F

$\Rightarrow 1200000 \times \dfrac{15}{100} \times \dfrac{70}{100}$

$= 126000$

Their sum

$= 115200 + 119040 + 126000$

$= 360240$

Number of present applicants :

Exam centre G

$\Rightarrow 1200000 \times \dfrac{25}{100} \times \dfrac{75}{100}$

$= 225000$

Exam centre J

$\Rightarrow 1200000 \times \dfrac{24}{100} \times \dfrac{82}{100}$

$= 236160$

Their sum $= 225000 + 236160$

$= 461160$

Required difference

$= 461160 - 360240 = 100920$

**60.** (3) Number of offline applicants :

Exam centre F

$\Rightarrow 1200000 \times \dfrac{15}{100} \times \dfrac{70}{100}$

$= 126000$

Exam centre H $\Rightarrow 115200$

Exam centre J

$\Rightarrow 1200000 \times \dfrac{24}{100} \times \dfrac{54}{100}$

$= 155520$

Exam centre G

$\Rightarrow 1200000 \times \dfrac{25}{100} \times \dfrac{56}{100}$

$= 168000$

Required sum $= 126000 + 155520 + 168000 + 115200$

$= 564720$

**61.** (2) Total number of present applicants from exam centre

$K = 1200000 \times \dfrac{16}{100} \times \dfrac{80}{100}$

$= 153600$

Total number of present applicants from exam centre J

$= 1200000 \times \dfrac{24}{100} \times \dfrac{54}{100}$

$= 155520$

Required ratio

$= 153600 : 155520 = 80 : 81$

**62.** (3) Present applicants :

Exam centre H

$\Rightarrow 1200000 \times \dfrac{20}{100} \times \dfrac{68}{100}$

$= 163200$

Exam centre G

$\Rightarrow 1200000 \times \dfrac{25}{100} \times \dfrac{75}{100}$

$= 225000$

Required sum

$= 163200 + 225000 = 388200$

**63.** (3) By the rule of alligation,

Mixture–A 10%  Mixture–B 30%

25%

30 – 25 = 5%  25 – 10 = 15%

$\therefore$ Required ratio = 5 : 15

= 1 : 3

**OR**

A 10%  B 30%

25%

5%  15%

Required ratio = 5 : 15 =1 : 3

[**Note :** Such type of questions easily solved by alligation method]

**64.** (3) By the rule of alligation,

Type–I Rs. 2500  Type–II Rs. 1500

Rs. 2250

2250 – 1500 = Rs. 750  2500 – 2250 = Rs. 250

$\therefore$ Required ratio = 750 : 250

= 3 : 1

**OR**

| Coffee I | | Coffee II |
|---|---|---|
| Rs. 2500/kg | | Rs. 1500/kg |
| | Rs. 2250/kg | |
| Rs. 750/kg | | Rs. 250/kg |

Required ratio = 750 : 250
= 3 : 1

**65.** (3) A's investment = Rs. $3x$
B's investment = Rs. $8x$
C's investment

$= \text{Rs. } \left(8x \times \frac{3}{4}\right) = \text{Rs. } 6x$

Ratio of their equivalent capitals fo 1 month
$= (3x \times 12) : (8x \times 12) : (6x \times 8)$
= 36 : 96 : 48 = 3 : 8 : 4
Sum of the terms of ratio
= 3 + 8 + 4 = 15
If the total annual profit be Rs. $y$, then

$\frac{4y}{15} = 24000$

$\Rightarrow y = \text{Rs. } \left(\frac{24000 \times 15}{4}\right)$

= Rs. 90000

**66.** (1) Ratio of equivalent capitals of A and B for 1 month
= (4 × 12) : (5 × 10)
= 24 : 25
Sum of the terms of ratio
= 24 + 25 = 49
∴ B's share

$= \text{Rs. } \left(\frac{25}{49} \times 49000\right)$

= Rs. 25000

**67.** (2) (A + B)'s 1 day's work

$= \frac{1}{40}$ ...(i)

(B + C)'s 1 day's work

$= \frac{1}{36}$ ...(ii)

(A + B + C)'s 1 day's work

$= \frac{1}{24}$ ...(iii)

∴ B's 1 day's work = equations (i) + (ii) – (iii),

$= \frac{1}{40} + \frac{1}{36} - \frac{1}{24}$

$= \frac{9+10-15}{360} = \frac{4}{360} = \frac{1}{90}$

∴ Required time = 90 days

**OR**

T.W (L.C.M of 40, 36 and 24)
360

| | A + B | B + C | A + B + C |
|---|---|---|---|
| Days : | 40 | 36 | 24 |
| Efficiency : | $\frac{360}{40} = 9$ | $\frac{360}{36} = 10$ | $\frac{360}{24} = 15$ |

C's efficiency = 15 – 9 = 6
A's efficiency = 15 – 10 = 5
B's efficiency = 15 – 11 = 4

Time taken by B $= \frac{360}{4}$

= 90 days.

**68.** (1) (A + B + C)'s 4 day's work

$= 4\left(\frac{1}{50} + \frac{1}{75} + \frac{1}{20}\right)$

$= 4\left(\frac{6+4+15}{300}\right)$

$= \frac{4 \times 25}{300} = \frac{1}{3}$

Remaining work $= \left(1 - \frac{1}{3}\right)$

$= \frac{2}{3}$

Now, (A + B)'s 1 day's work

$= \frac{1}{50} + \frac{1}{75} = \frac{3+2}{150}$

$= \frac{5}{150} = \frac{1}{30}$

∴ Time taken by (A + B) in doing 1 work = 30 days

∴ Required time $= \frac{2}{3} \times 30$

= 20 days

**OR**

T.W (L.C.M of 50, 70 and 20)
300

| | A | B | C |
|---|---|---|---|
| Days : | 50 | 75 | 20 |
| Efficiency : | $\frac{300}{50} = 6$ | $\frac{300}{75} = 4$ | $\frac{300}{20} = 15$ |

Their total effficiency
= (6 + 4 + 15) = 25

Their 4 days work = 25 × 4
= 100
Work left = (300 – 100) = 200
This work is done by A and B

in $\frac{200}{(6+4)}$ days = 20 days.

**69.** (4) Time taken by A in doing 1 work = 16 × 2 = 32 days
Time taken by B in doing 1 work = 4 × 24 = 96 days
∴ (A + B)'s 1 day's work

$= \frac{1}{32} + \frac{1}{96}$

$= \frac{3+1}{96} = \frac{4}{96} = \frac{1}{24}$

∴ Time taken by A and B in doing $\frac{3}{4}$ work

Time $= \frac{3}{4} \times 24 = 18$ days

**OR**

Time taken by A = 16 × 2
= 32 days.
Time taken by B = 24 × 4
= 96 days.

T.W (L.C.M of 32 and 96)
96

| | A | B |
|---|---|---|
| Days : | 32 | 96 |
| Efficiency : | $\frac{96}{36} = 3$ | $\frac{96}{96} = 1$ |

(A + B)'s efficiency = 3 + 1 = 4
Time taken by them to complete $\left(\frac{3}{4}\right)$th work

$= \frac{96}{4} \times \left(\frac{3}{4}\right) = 18$ days.

**70.** (4) A and B together do 1 work in 18 hours.

∴ Their 6 hours' work $= \frac{6}{18} = \frac{1}{3}$

Remaining work $= 1 - \frac{1}{3}$

$= \frac{2}{3}$ rd part

Time taken by B in doing $\frac{2}{3}$ rd work = 36 hours

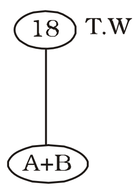
∴ Time taken by B in doing 1 work = $\frac{3}{2}$ × 36 = 54 hours

∴ A's 1 hour work = $\frac{1}{18} - \frac{1}{54}$

= $\frac{3-1}{54} = \frac{2}{54} = \frac{1}{27}$

∴ Required time = 27 hours

**OR**




Days : 18

Efficiency : $\frac{18}{18} = 1$

Their 6 hours work = 1 × 6 = 6
Work left = 18 – 6 = 12
This work is done by B in 36 hours.

B's efficiency = $\frac{12}{36} = \frac{1}{3}$

A + B = 1

⇒ A = $1 - \frac{1}{3} = \frac{2}{3}$

Time taken by A alone = $\frac{18}{\frac{2}{3}}$

= 27 hours.

**71.** (4) Price of 4 packets of biscuit
= Rs. (16 × 4) = Rs. 64
Price of 1 pack of 4 packets of biscuit = Rs. 56
Discount = Rs. (64 – 56)
= Rs. 8
If discount be $x$%, then

$\frac{64x}{100} = 8$

⇒ $x = \frac{8 \times 100}{64}$ = 12.5%

**OR**

C.P. of 1 packet of biscuit
= Rs. 16.
New C.P. of biscuit packet

= $\frac{56}{4}$ = Rs. 14

Effective discount%

= $\frac{16-14}{16} \times 100\%$

= $\frac{100}{8}$ = 12.5%

**72.** (4) C.P. of article = Rs. $x$.
∴ Its marked price = Rs. $3x$
According to the question,

$3x \times \frac{75}{100} = 540$

⇒ $3x \times \frac{3}{4} = 540$

⇒ $x = \frac{540 \times 4}{3 \times 3}$ = Rs. 240

**OR**

C.P. of article = Rs. $x$

M.P. of article = $x + \frac{200x}{100}$

= $3x$
S.P. = Rs. 540

D% = 25% = $\frac{1 \rightarrow \text{D}}{4 \rightarrow \text{M.P}}$

⇒ $540 = 3x - \frac{3x}{4}$

$540 = \frac{9x}{4}$

⇒ $\boxed{x = \text{Rs. } 240}$

**73.** (3) S.P. of 1 cheese box

= $750 - 750 \times \frac{2}{25}$

= 750 – 60 = Rs. 690
S.P. of 1 butter box

= $1250 - 1250 \times \frac{1}{5}$

= 1250 – 250 = Rs. 1000
Total S.P.
= 5 × 690 + 3 × 1000
= 3450 + 3000 = Rs. 6450
Total M.P. = 750 × 5 + 1250 × 3
= 3750 + 3750 = 7500
Discount%

= $\left(\frac{7500 - 6450}{7500}\right) \times 100\%$

= $\frac{1050}{7500}$ × 100 = 14%

**74.** (2) Market price of article = Rs. $x$
According to question,

$x \times \frac{85}{100} = 816$

⇒ $x = \frac{816 \times 100}{85}$ = Rs. 960

∴ Required selling price
= (100 – 25) of 960

= Rs. $\left(\frac{960 \times 75}{100}\right)$ = Rs. 720

**OR**

M.P. = $\frac{\text{S.P.} \times 100}{100 - \text{D}}$

⇒ M.P. = $\frac{816 \times 100}{100 - 15}$

= $\frac{816 \times 100}{85} = \frac{816 \times 20}{17}$

= 48 × 20 = Rs. 960

New S.P. = $\frac{960 \times (100-25)}{100}$

= $\frac{960 \times 75}{100}$ = Rs. 720

**75.** (2) Ratio of collection
= (7 × 13) : (9 × 11)
= 91 : 99
नया संग्रह

= $\left(\frac{99}{91} \times 227500\right)$ रुपए

= 247500 रुपए

**OR**

Ratio of Tickets

  7 : 9
× 13 : 11
  91 : 99

New Daily collection

= 2,27,500 + $\frac{(99-91) \times 2{,}27{,}500}{91}$

= 2,27,500 + $\frac{8 \times 2{,}27{,}500}{91}$

= Rs. 2,27,500 + 20,000
= Rs. 2,47,500

**76.** (4) 6A = 4B = 9C

⇒ $\frac{6A}{36} = \frac{4B}{36} = \frac{9C}{36}$

[∵ LCM of 6, 4 and = 36]

⇒ $\frac{A}{6} = \frac{B}{9} = \frac{C}{4}$

∴ A : B : C = 6 : 9 : 4

**OR**

6A = 4B = 9C

⇒ $\frac{A}{\frac{1}{6}} = \frac{B}{\frac{1}{4}} = \frac{C}{\frac{1}{9}}$

(L.C.M. of 6,4 and 9 = 36)

$\Rightarrow \frac{A}{6} = \frac{B}{9} = \frac{C}{4}$

$\Rightarrow$ A : B : C = 6 : 9 : 4

**77.** (3) Selected applicant = $2x$
unselected applicant = $x$
According to the question,

$$\frac{2x-25}{(3x-50)-(2x-25)} = \frac{9}{4}$$

$$\Rightarrow \frac{2x-25}{3x-50-2x+25} = \frac{9}{4}$$

$$\Rightarrow \frac{2x-25}{x-25} = \frac{9}{4}$$

$\Rightarrow 9x - 225 = 8x - 100$

$\Rightarrow x = 225 - 100 = 125$

$\therefore$ Number of applicants
= 3 × 125 = 375

**78.** (3) Let fourth proportional

$$\therefore \frac{189}{273} = \frac{153}{x}$$

$$\Rightarrow \frac{9}{13} = \frac{153}{x}$$

$\Rightarrow 9x = 153 \times 13$

$$\Rightarrow x = \frac{153 \times 13}{9} = 221$$

**OR**

Fourth proportional = $\frac{bc}{a}$

$$= \frac{273 \times 153}{189} = 221$$

**79.** (4) According to the question,

$x$ = Rs. $\frac{4y}{5}$

$y$ = Rs. $\frac{2z}{3}$

$\Rightarrow$ z = Rs. $\frac{3y}{2}$

$\therefore x + y + z = 11550$

$$\Rightarrow \frac{4y}{5} + y + \frac{3y}{2} = 11550$$

$$\Rightarrow \frac{8y+10y+15y}{10} = 11550$$

$\Rightarrow 33y = 115500$

$$\Rightarrow y = \frac{115500}{33} = \text{Rs. } 3500$$

$$\therefore z - x = \frac{3y}{2} - \frac{4y}{5}$$

$$= \frac{15y - 8y}{10} = \frac{7y}{10}$$

$$= \frac{7 \times 3500}{10} = \text{Rs. } 2450$$

OR

$$x : y : z = \frac{4y}{5} : y : \frac{3y}{2}$$

= 8 : 10 : 15

[$\because$ LCM of 5 and 2 = 10]

Sum of the term of ratio
= 8 + 10 + 15 = 33

$$\therefore z - x = \text{Rs. } \left(\frac{15-8}{33} \times 11550\right)$$

$$= \text{Rs. } \left(\frac{7}{33} \times 11550\right)$$

= Rs. 2450

**80.** (1) According to the question,

$$\frac{5x-1000}{3x-800} = \frac{2}{1}$$

$\Rightarrow 6x - 1600 = 5x - 1000$

$\Rightarrow 6x - 5x = 1600 - 1000$

$\Rightarrow x = 600$

$\therefore$ Number of tanks after war
= $5x$ – 1000 = 5 × 600 – 1000
= 3000 – 1000 = 2000

**OR**

Before battle ratio = 5 : 3

$$\frac{5 \text{ units} - 1000}{3 \text{ units} - 800} = \frac{2}{1}$$

$\Rightarrow$ 5 units = 1000
= 6 units = 1600
$\Rightarrow$ 1 unit = 600

Number of tanks after war
= 5 × 600 – 1000
= 3000 – 1000 = 2000

**81.** (4) Difference = 38 – 83 = –45

$$\therefore \text{Required average} = 65 - \frac{45}{50}$$

= 65 – 0.9 = 64.1

**82.** (3) Number of boys in the class = 50 – 22 = 28 whose average = $x$.
According to the question,

$28 \times x + 22 \times 35 = 50 \times 42$

$\Rightarrow 28x + 770 = 2100$

$\Rightarrow 28x = 2100 - 770 = 1330$

$$\Rightarrow x = \frac{1330}{28} = 47.5$$

**83.** (1) Average of 41 consecutive odd numbers = 49
$\therefore$ Middle i.e., 21st number
= 49

$\therefore$ Largest number
= 49 + 2 × 20 = 49 + 40 = 89

**84.** (1) Average runs of batsman after 20th match = $x$
According to the question,

$20x + 87 = (x + 2) \times 21$

$\Rightarrow 20x + 87 = 21x + 42$

$\Rightarrow 21x - 20x = 87 - 42$

$\Rightarrow x = 45$

**85.** (4) In 1 kg of ground–nut,
The left matter = 800 gm.
Price of left matter

$$= \text{Rs. } \left(\frac{12.5 \times 800}{1000}\right) = \text{Rs. } 10$$

S.P. of 1 kg. of ground–nut

$$= \frac{25 \times 120}{100} = \text{Rs.} = 30$$

According to the question,
S.P. of 200 gm of oil
= Rs. (30 – 10) = Rs. 20
$\therefore$ S.P. of oil = Rs. 100 per kg.

**86.** (2) C.P. of coconut

$$= \text{Rs. } \left(\frac{100}{90} \times 14.4\right) = \text{Rs. } 16$$

$\therefore$ To gain 25%,
Required S.P.

$$= \text{Rs. } \left(\frac{16 \times 125}{100}\right) = \text{Rs. } 20$$

**OR**

Loss% = 10%

$$= \frac{10 \to \text{Loss}}{100 \to \text{C.P.}}$$

$\Rightarrow$ S.P. = (100 – 10) = 90
$\Rightarrow$ 90 units = Rs. 14.4

$$\text{Profit \% = 25\%} = \frac{25 \to \text{P}}{100 \to \text{C.P.}}$$

$\Rightarrow$ S.P. = (100 + 25) = Rs. 125
90 units = 14.4

$$\Rightarrow 125 \text{ units} = \frac{14.4 \times 125}{90}$$

$$= \frac{16 \times 125}{100} = \text{Rs. } 20$$

**87.** (4) C.P. of horse = Rs. $x$
$\therefore$ C.P. of Camel
= Rs. (51250 – $x$)
According to the question,

$$\frac{x \times 125}{100} = (51250 - x) \times \frac{80}{100}$$

$\Rightarrow x \times 25 = (51250 - x)\ 16$

$\Rightarrow 25x = 51250 \times 16 - 16x$

$\Rightarrow 25x + 16x = 51250 \times 16$

$\Rightarrow 41x = 51250 \times 16$

$$\Rightarrow x = \frac{51250 \times 16}{41} = \text{Rs. } 20000$$

**OR**

**Aliter – 1 :**

Let C.P. of Horse = $x$

C.P. of Camel = 51,250 – $x$

S.P. of Horse = S.P. of Camel

$$x \times \left(1+\frac{1}{4}\right) = (51250 - x)\left(1-\frac{1}{5}\right)$$

$$\frac{x \times 5}{4} = (51250 - x) \times \frac{4}{5}$$

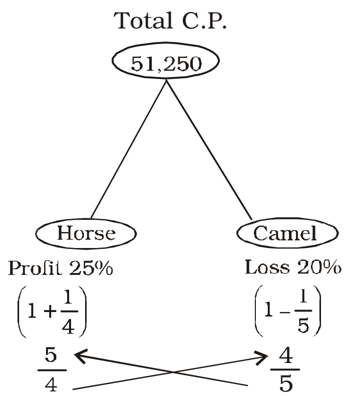
$25x = 51250 \times 16 - 16x$

$41x = 51250 \times 16$

$$x = \frac{51250 \times 16}{41} = x = 20{,}000$$

⇒ Cheaper animal cost was Rs. 20000

**Aliter – 2 :**




$$\text{C.P. of Horse} = \frac{51250 \times (16)}{(16+25)}$$

$$= \frac{51250 \times 16}{41} = \text{Rs. } 20{,}000$$

**88.** (3) Let the C.P. of article be Rs. 100.

∴ Its S.P. = Rs. 250

New C.P. = Rs. 125

Profit = Rs. (250 – 125)

= Rs. 125

$$\therefore \text{ Profit per cent} = \frac{125}{125} \times 100$$

= 100%

**OR**

Profit% = 150%

$$= \frac{150 \to P}{100 \to C.P}$$

⇒ S.P. = 250

New C.P. = 125

$$\text{Profit \%} = \left(\frac{250-125}{125}\right) \times 100$$

$$= \frac{125}{125} \times 100 = 100\%$$

**89.** (1) Let the maximum marks of exam be $x$.

According to the question,

$$\frac{40x}{100} = 250 + 38$$

$$\Rightarrow \frac{2x}{5} = 288$$

$$\Rightarrow x = \frac{288 \times 5}{2} = 720$$

**OR**

Maximum Marks = $x$

⇒ 40% of $x$ = 250 + 38

$$\frac{40x}{100x} = 288$$

$$x = \frac{2880}{4} = x = 720$$

**90.** (4) Let Surya's present age be $x$ years.

∴ Ravi's present age

= ($x$ – 12) years

According to the question,

$$x - 12 = (x - 12 + x) \times \frac{40}{100}$$

$$\Rightarrow x - 12 = (2x - 12) \times \frac{2}{5}$$

⇒ $5x - 60 = 4x - 24$

⇒ $5x - 4x = 60 - 24$

⇒ $x$ = 36 years

∴ Surya's age 9 years hence

= (36 + 9) years = 45 years

**OR**

S – R = 12

$$R = \frac{2}{5}(R + S)$$

$$\because 40\% = \frac{2}{5}$$

5R = 2R + 2S

3R = 2S

$$\Rightarrow R = \frac{25}{3}$$

$$S - \frac{25}{3} = 12$$

⇒ S = 36

After 9 years,

Sury's age = 36 + 9 = 45 years.

**91.** (4) $a \times \frac{5}{100} = b$

$$\Rightarrow \frac{a}{20} = b \quad \ldots(i)$$

$$\therefore b\% \text{ of } 20 = \frac{20 \times b}{100} = \frac{b}{5}$$

$$= \frac{a}{20 \times 5} = \frac{a}{100} = a\%$$

[From equation (i)]

Clearly, 20% of $\frac{a}{20}$

$$= \left(\frac{a}{20} \times 20\right)\% = a\%$$

**92.** (2) Let the original annual income of the man be Rs. $x$ lakhs.

According to the question,

$$(x + 5)\frac{10}{100} - \frac{x \times 12}{100}$$

$$= \frac{10000}{100000} = 0.1$$

⇒ $10x + 50 - 12x = 0.1 \times 100$

⇒ $50 - 2x = 10$

⇒ $2x = 50 - 10 = 40$

$$\Rightarrow x = \frac{40}{2} = \text{Rs. 20 lakhs}$$

∴ Increased income of man

= Rs. (20 + 5) lakhs

= Rs. 25 lakhs

**93.** (3) Speed of racing car

= 108 kmph.

∴ Length of racing track

= Speed × Time

$$= \frac{108 \times 15}{60} = 27 \text{ km.}$$

∴ Required speed of cover this length in 12 minutes

$$= \left(\frac{27}{12} \times 60\right) \text{ kmph.}$$

= 135 kmph.

∴ Required increase in speed

= (135 – 108) kmph.

= 27 kmph.

**94.** (3) Let the speed of train A be $x$ kmph and that of train B be $y$ kmph.

According to the question,

$$\frac{\text{Distance}}{\text{Speed}} = \text{Time}$$

$$\Rightarrow \frac{450}{x} - \frac{450}{y} = \frac{450}{60}$$

$$\Rightarrow \frac{450}{x} - \frac{450}{y} = \frac{3}{4} \quad \ldots(i)$$

Again, new speed of train B

$$= \frac{3y}{4} \text{ kmph.}$$

$$\frac{450}{\frac{3y}{4}} - \frac{450}{x} = \frac{30}{60}$$

$$\Rightarrow \frac{450 \times 4}{3y} - \frac{450}{x} = \frac{1}{2}$$

$$\Rightarrow \frac{600}{y} - \frac{450}{x} = \frac{1}{2} \quad \ldots\text{(ii)}$$

On adding equations (i) and (ii),

$$\frac{600}{y} - \frac{450}{y} = \frac{3}{4} + \frac{1}{2}$$

$$\Rightarrow \frac{150}{y} = \frac{3+2}{4} = \frac{5}{4}$$

$$\Rightarrow y = \frac{150 \times 4}{5} = 120 \text{ kmph.}$$

From equation (i),

$$\frac{450}{x} - \frac{450}{120} = \frac{3}{4}$$

$$\Rightarrow \frac{450}{x} - \frac{15}{4} = \frac{3}{4}$$

$$\Rightarrow \frac{450}{x} = \frac{15}{4} + \frac{3}{4} = \frac{18}{4}$$

$$\Rightarrow \frac{450}{x} = \frac{9}{2}$$

$$\Rightarrow x = \frac{450 \times 2}{9} = 100 \text{ kmph.}$$

**95.** (2) Let the distance between two cities be $x$ km.
According to the question,

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\Rightarrow \frac{x}{72} - \frac{x}{90} = 1$$

$$\Rightarrow \frac{5x - 4x}{360} = 1$$

$\Rightarrow x = 360$ km.

**96.** (3) X ——— Z ——— Y

Z = meeting point of A and B.
A covers a total of 8 miles.
$\therefore$ Time taken by A = 8 × 8
= 64 minutes
$\therefore$ B covers a distance of 6 miles in 64 – 4 = 60 minutes
i.e., B will cover a distance of 1 mile in 10 minutes.

**97.** (3) Required amount

$$= P\left(1 + \frac{R}{100}\right)$$

$$= 12000\left(1 + \frac{12}{100}\right)$$

$$= \text{Rs. } \left(\frac{12000 \times 112}{100}\right)$$

= Rs. 13440

**OR**

Amount after 3 years
= Rs. 12,000 will become principal in 4th year.
$\Rightarrow$ Amount in 4th year

$$= 12000 + \frac{12000 \times 12 \times 1}{100}$$

= 12000 + 1440 = Rs. 13440

**98.** (1) $A = P\left(1 + \frac{R}{100}\right)^T$

$$\Rightarrow 119790 = P\left(1 + \frac{10}{100}\right)^3$$

$$\Rightarrow 119790 = P\left(1 + \frac{1}{10}\right)^3$$

$$\Rightarrow 119790 = P\left(\frac{11}{10}\right)^3$$

$$\Rightarrow P = \frac{119790 \times 10 \times 10 \times 10}{11 \times 11 \times 11}$$

= Rs. 90000

**OR**

$$A = P\left(1 + \frac{x}{100}\right)^n$$

$$\Rightarrow 1{,}19{,}790 = P\left(1 + \frac{1}{10}\right)^3$$

$$\Rightarrow P = \frac{119790 \times 10 \times 10 \times 10}{11 \times 11 \times 11}$$

= Rs. 90000

**99.** (1) Rate = 20% of per annum
= 10% per half–year.
Amount = Principal + Interest
= Rs. (8000 + 2648)
= Rs. 10648

$$A = P\left(1 + \frac{R}{100}\right)^T$$

$$\Rightarrow 10648 = 8000\left(1 + \frac{10}{100}\right)^T$$

$$\Rightarrow \frac{10648}{8000} = 1\left(\frac{11}{10}\right)^T$$

$$\Rightarrow \frac{1331}{1000} = \left(\frac{11}{10}\right)^T$$

$$\Rightarrow \left(\frac{11}{10}\right)^3 = \left(\frac{11}{10}\right)^T$$

$\Rightarrow$ T = 3 half–years

$\therefore$ Required time = $\frac{3}{2}$ years
= 18 months

**OR**

$$A = P\left(1 + \frac{x}{100}\right)^n$$

$$10648 = 8000\left(1 + \frac{1}{10}\right)^{2n}$$

$$\Rightarrow 10648 = 8000 \times \left(\frac{11}{10}\right)^{2n}$$

$$\frac{1331}{1000} = \left(\frac{11}{10}\right)^{2n}$$

$$\left(\frac{11}{10}\right)^3 = \left(\frac{11}{10}\right)^{2n}$$

$$\Rightarrow 2n = 3 \qquad \Rightarrow n = \frac{3}{2}$$

$$\Rightarrow \text{Months} = \frac{3}{2} \times 12 = 18$$

**100.** (1) S.I. for 2 years = Rs. 4000

$$\therefore \frac{PR}{100} = 2000$$

$\Rightarrow$ PR = Rs. 200000 ...(i)
For 2 years,
C.I. – S.I. = 4160 – 4000
= Rs. 160

$$\therefore \frac{PR^2}{10000} = 160$$

$$\Rightarrow \frac{200000 \times R}{10000} = 160$$

$\Rightarrow$ 20R = 160

$$\Rightarrow R = \frac{160}{20} = 8\% \text{ per annum}$$

OR

According to the question,
S.I. on Rs. 2000 for 1 year
= Rs. 160

$$\therefore \text{Rate} = \frac{160}{2000} \times 100$$

= 8% per annum

SET 45

# SOLVED PAPER

# SSC CGL TIER-II (CBE) EXAM

Held on : 17.02.2018

## ENGLISH LANGUAGE AND COMPREHENSION

**Directions (1–3) :** In the following questions, out of the given four alternatives, select the one which best expresses the meaning of the given word.

**1. Guzzle**
(1) Sip (2) Imbibe
(3) Starve (4) Release

**2. Hound**
(1) Critic (2) Migrate
(3) Beagle (4) Variable

**3. Embargo**
(1) Barrier (2) Prescribe
(3) Comfort (4) Justify

**Directions (4–6) :** In the following questions, out of the given four alternatives, select the one which is opposite in meaning of the given word.

**4. Swindle**
(1) Insert (2) Dupe
(3) Ample (4) Honesty

**5. Vista**
(1) Confront
(2) Contour
(3) Blindness
(4) Outlook

**6. Tempestuous**
(1) Stress (2) Toil
(3) Calm (4) Examine

**Directions (7–16) :** In the following questions, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

**7. Whoop it up**
(1) Be continually reminded of an unpleasant topic
(2) Enjoying in a noisy way, usually in a group
(3) Be totally ignorant or incompetent
(4) Used as an exhortation to overcome or be rid of something

**8. With a vengeance**
(1) A complete disaster
(2) Having similar views or attitude to something
(3) To look out for something without particular attention
(4) Used to emphasize the degree to which somethings occurs

**9. Up against the wall**
(1) To take care of themselves and their own interests and safety
(2) In a disorderly fashion
(3) In an inextricable situation
(4) Performing well in a difficu lt or competitive situation

**10. Reap the whirlwind**
(1) Providing that other factors or circumstance remain the same
(2) Suffer negative consequences as a result of one's actions
(3) An indication that something is accepted or regarded favourably
(4) Believing that moderation is more satisfying than excess

**11. Of the first water**
(1) Leading a comfortable life
(2) Acting contrary to the one's interests
(3) Critically important
(4) Of the best quality

**12. Weather the storm**
(1) Be absolutely unwilling to cooperate
(2) Fall over in a sudden or dramatic way
(3) Survive a period of difficulty
(4) Dispute a decision or choice already made

**13. Spin your wheels**
(1) Set an activity in motion
(2) Waste your time or efforts
(3) A firmly held belief
(4) With great affection or enthusiasm

**14. Wear the green willow**
(1) To do something for someone as an act of kindness
(2) Suffer unrequited love
(3) Cause someone to be very frightened
(4) Producing a lavish celebrating feast

**15. Wild and woolly**
(1) Uncouth in appearance or behaviour
(2) Either too much of something or too little
(3) Near to perfection
(4) Ignoring all obligations

**16. Give it a whirl**
(1) To be engaged in cheating
(2) To completely destroy som ething
(3) Attach or criticize someone
(4) To try out something

**Directions (17–28) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**17. Killer of prophet**
(1) Mariticide
(2) Vaticide
(3) patricide
(4) Sororicide

**18. A person who preserves skin of animals**
(1) Biloquist
(2) Philologist
(3) Taxidermist
(4) Oculist

**19. A government by the military class**
(1) Kratocracy
(2) Pantisocracy
(3) Stratocracy
(4) Mobocracy

**20. Obsession for wine**
(1) Ethnomania
(2) Oenomania
(3) Egomania
(4) Idolomania

**21. A person's last performance**
(1) Prognosis
(2) Elegy
(3) Memoir
(4) Swan song

**22. Eating mud**
(1) Equivorous
(2) Limivorous
(3) Calcivorous
(4) Fructivorous

**23. Kiling of birds**
(1) Herbicide
(2) Avicide
(3) Vulpicide
(4) Matricide

**24. Love for dogs**
(1) Paedophilia
(2) Sinophile
(3) Canophilia
(4) Zoophilia

**25. Lack of civic-mindedness or of patriotism**
(1) Iconomachy
(2) Incivism
(3) Shag
(4) Clergy

**26. Study of snakes**
(1) Philology
(2) Phrenology
(3) Ophilogy
(4) Urology

**27. Preferring or attracted to sunlight**
(1) Lithophilous
(2) Heliophilous
(3) Topophilia
(4) Homophile

**28. Mutual discourse**
(1) Soliloquy
(2) Obloquy
(3) Colloquy
(4) Eloquence

**Directions (29–31) :** In the following questions, four words have been given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**29.** (1) Declension
(2) Labyrinth
(3) Quintessence
(4) Pandemonioun

**30.** (1) Irrepresible
(2) Irrefutable
(3) Irrevocable
(4) Irresistible

**31.** (1) Acquaintance
(2) Ascendance
(3) Claervoyance
(4) Countenance

**Directions (32–36) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**32.** Lateral thinking method is ______ with creation of new ideas that is a procedure and readiness to look at things in a diverse approach.
(1) regressive
(2) neoconservative
(3) aggressive
(4) apprehensive

**33.** Time perception raises a number of ______ puzzles, including what it means to say we perceive time.
(1) discriminating
(2) intriguing
(3) boring
(4) befooling

**34.** The theoretical framework is finished by identifying indicators to be used in the ______ of the success of such policies.
(1) evaluation
(2) completion
(3) formation
(4) rotation

**35.** Many national surveys ______ that malnutrition is common in developed countries.
(1) wheal (2) reveal
(3) sheal (4) vineal

**36.** Operant conditioning can be described as a learning ______ that is used to modify or change a person's behaviour through experiences and consequences.
(1) method (2) object
(3) goal (4) suspect

**Directions (37–56) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select No Error.

**37.** Many firms fail because when they begin (1)/ exporting, they have not research the (2)/ target markets or have not planned enough. (3)/ No error (4)

**38.** Part of what a man learns will measurable (1)/ as specific knowledge and skills, while (2)/another part involves changes. (3)/ No error (4)

**39.** He explained that the pillars of tribalism (1)/ that humans rely on for security would always (2)/ counter any significant culture or social change. (3)/ No error (4)

**40.** There is a barrier among the egghead and (1)/ the hoipolloi and it would be lazy (2)/ idealism to ignore it. (3)/ No error (4)

**41.** Credit when used responsibly, can achieve a great number (1)/ of positive things in our lives, such as (2)/ financing and paying of our dream hybrid or college tuition fees. (3)/ No error (4)

**42.** As with people, some monkeys are lazy, (1)/ like those who sleep all day in the zoo, (2)/ and some were industrious. (3)/ No error (4)

**43.** The postman travelled by the cycle, often wading through (1)/swamps or passed through jungles (2)/in order to reach the villages (3)/ No error (4)

**44.** No matter what Ashoka did in his earlier (1)/ years, in the ending he proved to be uncommonly (2)/ virtuous and wise. (3)/ No error (4)

**45.** Modern medicines has scored significant victories (1)/ against both infection and trauma (2)/ the major causes of ill health and death. (3)/ No error (4)

**46.** If life existed on Mars, it is most likely to be in (1)/ the form of bacteria buried deep in (2)/ the planet's permafrost or lichens. (3)/ No error (4)

**47.** Can India make it to a leadership position (1)/ or will it be retained the 'fast train-going-slow' (2)/ image it always had? (3)/ No error (4)

**48.** The priest class took upon itself the monopoly (1)/ of scriptural knowledge and interpretation (2)/ of the same to its own advantage. (3)/ No error (4)

**49.** He said that he thought off politics right when (1)/ he was studying Intermediate and that (2)/ he had no fear of politics. (3)/ No error. (4)

**50.** While provisions on equality and non-discrimination (1)/ would promote equal opportunity, (2)/ in the process, reservation at jobs should not be denied. (3)/ No error. (4)

**51.** Government has reportedly made its displeasure known, (1)/ particularly on the speed and stealth with which (2)/ the negotiations are completed. (3)/ No error. (4)

**52.** This will explains the decision taken (1)/ to impose a blockade on the country in (2)/ the midst of a crisis. (3)/ No error. (4)

**53.** He built the theatre as a tribute to his rootings (1)/ and the thought of it outlasting him, (2)/ would surely have given him the greatest joy. (3)/ No error. (4)

**54.** As several studies shows over (1)/ the years, the annual data is useful in (2)/ reviewing trends of extreme events. (3)/ No error. (4)

**55.** The most effective measure to keep (1)/ our roads safe is enforcement of rules (2)/ with zero tolerance to any violate rule. (3)/ No error. (4)

**56.** Service providers cannot stand in the way of a (1)/ consumer's access to content, it should have being provided (2)/ without any hindrance. (3)/ No error. (4)

**Directions (57–71) :** In the following passage some of the words have been left out. Read each passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

**PASSAGE–I**

The entry of foreign media has to be **(57)** by strict rules. Any intention to **(58)** the country politically or economically or any attempt at cultural **(59)** in order to make the country a slave to the designs of international powers would not be **(60)**. If the foreign media is keen on making a presence on the Indian soil, respect for the country's unity and **(61)** is essential.

**57.** (1) governed (2) rejected (3) dejected (4) retained

**58.** (1) grapple (2) cripple (3) scruple (4) stripple

**59.** (1) absenteeism (2) clonism (3) imperialism (4) dogmatism

**60.** (1) abated (2) confiscated (3) assimilated (4) tolerated

**61.** (1) accountability (2) responsibility (3) integrity (4) vulnerability

**PASSAGE–II**

Our reputation and image is most definitely determined by our **(62)**. Also our **(63)** tend to be habit forming, in that we have a **(64)** to act in a particular manner. Hence most people are **(65)** by their deeds and seem to have little control over their actions. We usually act according to or in response to our surroundings-our circumstances and the environment which to a great extent **(66)** our priorities and objectives.

**62.** (1) deeds (2) needs (3) creed (4) breed

**63.** (1) actings (2) avocations (3) bisections (4) predispositions

**64.** (1) immensity (2) propensity (3) viscosity (4) virtuously

**65.** (1) born (2) alive (3) shaped (4) killed

**66.** (1) questions (2) clarify (3) petrify (4) modifies

**PASSAGE–III**

Violence takes a heavy toll and affects public life **(67)**. High or low, known or unknown, rich or poor, popular or unpopular, no one is safe or secure today. It appears that one can harm anybody at any time and at **(68)**. A mad and sad rat race is on to make money and **(69)** power at any cost and by any means. The result is that no political party or group can now **(70)** into claim to total innocence in so far as **(71)** of violence against innocent person for personal or political gains is concerned. Violent demonstrations, rallies, hartals have become the order of the day.

**67.** (1) adversely (2) moderately (3) relatively (4) ultimately

**68.** (1) wish (2) will (3) drill (4) still

**69.** (1) retain (2) sustain (3) gain (4) maintain

**70.** (1) lie (2) laid (3) lain (4) lay

**71.** (1) penetration (2) precipitation (3) perpetration (4) interpretation

**Directions (72–91) :** The question below consists of a set of labelled sentences. These sentences, when properly sequenced form a coherent paragraph. Select the most logical order of sentences from among the options.

**72.** P : We may see alcohol and tobacco advertisements everywhere, on television, in newspaper, on street ads card etc.

Q : But we know the truth is alcohol and cigarette are harmful for people's health and sometimes it may bring bad effects to self-impression.

R : Alcohol ads usually create several feints to tell people that alcohol is good for people and induce people to drink.

S : On the other hand, the malign influence of advertisements shows smoking as something "cool".

(1) PRSQ (2) PSQR (3) QRSP (4) RSPQ

**73.** P : If the intention is just to consume whatever comes from the West, then it is harmful.

Q : Some of its effects are really helping and positive as it increases initiative and entrepreneurship qualities provided taken in that spirit.

R : At the same time state's strategic intervention is essential because more than 40% of people live below poverty line.

S : The impact of economic reforms are mixed.

(1) SRQP (2) SQPR
(3) RQPS (4) QPSR

**74.** P : The political awakening cannot be an isolated phenomenon; it requires some changes in social structure so that woman can enjoy as important a place as man occupies.

Q : Unfortunately our customs and traditions conspired with her economic dependence to make her unimportant in our society.

R : Democracy in India can be a success only when the Indian women are politically awakened.

S : Moreover they should be free to express their opinion, to act as they like and to assert themselves in all departments of life.

(1) PSQR (2) SQPR
(3) PRSQ (4) RPSQ

**75.** P : No partner is expected to air the views of a particular group in public.

Q : The only requirement is that the coalition partners have to stick to a code of conduct.

R : Every coalition party has to own the responsibility for all government policies or actions.

S : Experience has now shown that a coalition government can run as smoothly as any single party government.

(1) QRPS (2) RQPS
(3) SQRP (4) PQSR

**76.** P : Biographies of great men can also help us in learning good manners.

Q : Courtesy and politeness is the key to good manners.

R : No doubt these are little words but if they are spoken at the right moment and in a soft and sweet voice, they are bound to work wonders.

S : The use of polite words like "Sorry", "Please", "Thank you", "Beg your pardon", "Sir" etc. creates a healthy impact on the minds of others.

(1) PRSQ (2) RPSQ
(3) QPSR (4) SPQR

**77.** P : One has to work hard to establish, develop and maintain deep and lasting bonds with those who matter in one's life.

Q : As "Man is not an island entire of itself", he cannot be happy in isolation.

R : Humans live out their life in the company of their family, friends, colleagu es, superiors, even total strangers in buses and lifts.

S : And, brick by brick, they must build their relationship with each one, to lay a secure foundation for their road to happiness.

(1) SPRQ (2) RQSP
(3) QSPR (4) QRSP

**78.** P : Superstitions mean an irrational belief in or notion of the ominous significance of a particular thing, circumstance, or the like.

Q : This is a universal phenomenon cutting across caste, communal, and even national boundaries.

R : All over the globe, people have superstitions, although the superstitions may vary from country to country or from region to region.

S : Nor does education drives away superstitions completely.

(1) PQRS (2) SQRP
(3) QRPS (4) RPSQ

**79.** P : Superstitions exist throughout the world despite scientific advances.

Q : One cannot heed anybody's sneezes if one has to be punctual on duty or 'cannot miss a flight.

R : But the spread of science and education among the masses has certainly given rise to a significant number of persons who do not believe in these superstitions.

S : The compulsions of modern life have also caused some of the superstitions to fade out.

(1) RPSQ (2) SQRP
(3) SRQP (4) PRSQ

**80.** P : All these ensure that the world we live in grows a new skin every few years.

Q : These influences do, of course, work on humankind but they have the greatest impact on that section of society which is on the threshold of discovery-discovery of the self, of life and of living.

R : The life and times of two generations cannot be identical or even similar, thanks to modern research, progress in science, faster and easier communications and even distasteful things like inflation and population explosion.

S : These changes in due course affect our thinking and influence our attitudes, expectations, behavioural patterns and values.

(1) PSQR (2) RPSQ
(3) QSPR (4) QPSR

**81.** P : A certain moral code of conduct is ultimately necessary to ensure that the society does not fall prey to degeneration of values, which would lead to rampant sufferings and ultimately chaos.

Q : Society's concerns are our concerns : anything capable of causing a detrimental impact on it in the short term or in course of time is ultimately bound to affect us and our children.

R : When we talk about social morality of any kind, what comes into play is our ability to feel for the well-being of our society.

S : It is a concern to help the society by safeguarding it from unwanted ills and malaise and ensuring its well-being that is at the root of social morality.

(1) PSQR (2) RPSQ
(3) QPSR (4) PQRS

**82.** P : Those who say death should be the punishment in some cases, agree that it is to be in special cases alone, the most heinous and gravest of crimes.

Q : They feel that it is only fear of severe punishment that will deter the criminal and reduce the occurrence of heinous crimes.

R : The advocates and the abolitionists of capital punishment have their own arguments in support of their stand.

S : The most prominent argument put forth by the advocates of the death penalty is that of deterrence.

(1) RPSQ (2) PQSR
(3) SQPR (4) QPSR

**83.** P : There was once a time when people looked forward to the lazy evenings.

Q : They had a simple choice of programmes on Doordarshan.

R : It was entirely up to them to watch or not to watch the selected presentation.

S : Today, the satellite and Cable Television have stormed the media world of information and entertainment.

(1) PSQR (2) RQPS
(3) PQRS (4) QPRS

**84.** P : He wanted to do something to deliver the humanity from all such misery. He reflected on this problem for long.

Q : Siddhartha was greatly touched as he saw an old man, a sick man and a dead body.

R : At last on hearing some words from the mouth of a hermit which encouraged him to renounce the world, he decided to leave the palace and go into the forest for meditation.

S : Before going, he had a lasting glance on his beloved wife Yashodhra and son, Rahul, who were enjoying a sound sleep at mid-night.

(1) PRSQ (2) RPQS
(3) PQRS (4) QPRS

**85.** P : The main manifestations of violence in recent times have been extremism, terrorism, assassination by bombs and bullets.

Q : In the modern world, violence has taken many forms, each signifying the evil side of man and his design to destroy the principle of equity, justice and truth.

R : Another related activity is the hijacking of aircrafts, vehicles etc.

S : A new dimension to the cult of violence has been added by the cult of kidnapping of innocent person and subsequent black mail.

(1) QPSR (2) PSRQ
(3) PRQS (4) SRPQ

**86.** P : Children with poor phonological skills progress more poorly.

Q : The consensus concerns the causal role of phonological skills in young children's reading progress.

R : Studies of the factors governing reading development in young children have achieved a remarkable degree of consensus over the past two decades.

S : Children who have good phonological skills, or good phonological awareness become good readers and good spellers.

(1) QSPR (2) SPQR
(3) RQSP (4) PQRS

**87.** P : Then the liberalisation process became inevitable.

Q : It encourages initiative, entrepreneurship and competition which is very vital for growth of the economy.

R : In due course of time our institutions became stagnant, corrupt and inefficient due to permit raj and centralized control.

S : Liberalisation enhances economic activities.

(1) PQSR (2) RPSQ
(3) QPRS (4) RSQP

**88.** P : As a result, they are more able to live in harmony with themselves and with the world that surrounds them.

Q : Stabilizing meditation is catalogued as one of the hardest techniques of meditation because followers must keep their minds under total control for long period of time.

R : The benefits of this meditation, according to the followers, is that meditators can experience full understanding of their thoughts and ideas.

S : This consists of maintaining full attention to their role object focus.

(1) QSRP (2) PQRS
(3) QPSR (4) PRQS

**89.** P : They feel that during their time, young boys and girls were better behaved, more obedient, and had greater respect for their elders.
Q : Young people on the other hand, feel that they are capable enough to learn on their own rather than lean heavily on the older generation for any guidance.
R : The people belonging to the older generation always wonder as to what has gone wrong with the new generation.
S : They feel that a lack of respect for the old will ruin and spell disaster for the young.
(1) PRSQ (2) SPQR
(3) PRQS (4) RPSQ

**90.** P : About 30 new hydro projects are now under execution with an installed capacity of 5,600 MW.
Q : However, with the rapid increase in demand for power, higher priority was given to the pithead super thermal power stations as their gestation period was smaller than that of the hydel schemes.
R : Many projects were taken up for execution after independence and at one time (1962-63), the capacity contribution from hydro schemes was equal to thermal schemes.
S : The first hydro generating unit in India was commissioned in Darjeeling (W.Bengal) in 1897.
(1) RQPS (2) SRQP
(3) QPSR (4) PQRS

**91.** P. Farmers could no longer pay their loans and some banks were closed down.
Q. Prices dropped due to increased supply, which was followed by a drought.
R. The country was well advanced in technology and farmers increased their production levels.
S. The Great Depression in America began with overproduction and low prices in the agricultural sector.
(1) RQPS (2) QPSR
(3) PSRQ (4) SRQP

**Directions (92–113) :** In the following questions, a sentence/part of the sentence is printed in **bold**. Below are given alternatives to the **bold** sentence/part of the sentence which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is **No Improvement.**

**92.** Internet providers would not block content because it would **(not to be make economic sense)** and consumers would not stand for it.
(1) not be making economical sense
(2) not be make economical sense
(3) not make economic sense
(4) No Improvement

**93.** "An interview after the campaign ends **(is the normal)** for every candidate and every campaigner in every election," he said.
(1) is the norm
(2) is the normally
(3) is continuality
(4) No Improvement

**94.** The tribunal noted that the driver of the **(offend)** truck did not lead any evidence in rebuttal of the claims.
(1) offencing
(2) offending
(3) offence
(4) No Improvement

**95.** We have made progress in our development journey, and people **(came)** out in large numbers to vote for development.
(1) had come
(2) coming
(3) will come
(4) No Improvement

**96.** **(It is been seen)** as a "prestige battle" for the PM and a litmus test for the president of the opposition party.
(1) It have been seen
(2) It is being seen
(3) It had being seen
(4) No Improvement

**97.** The company hopes to eventually provide Singapore with the second-biggest electric car-sharing service in the world, **(second to Paris only)**.
(1) second only to Paris
(2) second to only Paris
(3) only second to Paris
(4) No Improvement

**98.** While two judges in the majority said the practice was arbitrary and, therefore, unconstitutional, the third judge called it **(legally)**.
(1) illegally
(2) illegal
(3) legality
(4) No Improvement

**99.** The Centre would reconsider its draft and limit its scope to just providing relief to women, **(instead of creating a new regulative)**.
(1) instead of creating a new regulatory
(2) instead of making a new regulator
(3) instead of creating a new regulation
(4) No Improvement

**100.** The duo's network was **(made to learn identify)** true signals using previously vetted signals; they then studied the weaker signals.
(1) made to learn to identify
(2) made to learning to ident ify
(3) made learning to identify
(4) No Improvement

**101.** It also indicates the caveats and failure modes in the model need to be improved before **(been used independently)**.
(1) been using independently
(2) being used independently
(3) been independently
(4) No Improvement

**102.** The B109 funds are intended to offset the loss of wages due to TB, and to help with **(both travelling and nutrition).**
(1) both traveled and nutrition
(2) both travelling and nutritional
(3) both travel and nutrition
(4) No Improvement

**103.** But understanding what constitutes such **(a miracle diet)**, and making sure that patients get it, isn't as straightforward as it seems.
(1) a miraculous diet
(2) a miracling diet
(3) an miracling diet
(4) No Improvement

**104.** The Centre's bid to dispel the pall of gloom over the economy **(have been helped)** in recent weeks by a rating.
(1) had been help
(2) has been helped
(3) have been helping
(4) No Improvement

**105.** Expensive oil could hit consumption and public investment and dent private investment **(what is not a path)** to a sustained revival.
(1) who is not a path
(2) whom is not a path
(3) which is not a path
(4) No Improvement

**106.** Without any exaggeration, the provision will ensure that legislators **(keep a voice)** in finalizing the terms and conditions of the agreement.
(1) have a voice
(2) head a voice
(3) lost a voice
(4) No Improvement

**107.** **(As soon after the players arrived)** in decorated cars, the ceremony began with traditional African drummers and dancers blowing conch shells.
(1) Soon after the players arrive
(2) Soon after the players arrived
(3) As soon as the players arrived after
(4) No Improvement

**108.** **(They have hold)**, it is in the fitness of things that the legislature should be taken into confidence on Brexit.
(1) They have holding
(2) They have held
(3) They has held
(4) No Improvement

**109.** Whatever said and done, (**not less vital)** is the future of the border separating Northern Ireland from the Irish Republic.
(1) any less vital
(2) more less vital
(3) no less vital
(4) No Improvement

**110.** It nuances the larger debate on whether such votes should override the will of the legislature, **(or guided it further)**.
(1) or guide it further
(2) or guide it to further
(3) or guidance further
(4) No Improvement

**111.** A new chapter **(may been put forth)** that India gained Independence only in the last one year and not in 1947.
(1) may have been putted forth
(2) may be put forth
(3) may be left forth
(4) No Improvement

**112.** According to an official spokesperson, polling was held amid tight security arrangements in 29 municipal councils and panchayats **(over the State)**.
(1) besides the State
(2) behind the State
(3) across the State
(4) No Improvement

**113.** Election was an 'opinion minus democracy' in which the innocent and helpless **(people were pitted among)** government's muscle power State machinery.
(1) people were pitted against
(2) people are pitted against
(3) people would pitted against
(4) No Improvement

**Directions (114–133) :** You are given four passages. Read the passage carefully and select the best answer to each question out of the given four alternatives.

**Passage–I**
**(Q. No. 114–118)**

The conclusion of World Trade Organization's 11th biennial ministerial conference at Buenos Aires was worrisome. From an Indian standpoint, there was no loss as status quo continues in the most important issue : the right to continue the food security programme by using support prices. But the inability of the negotiators to reach even one substantive outcome suggests that WTO's efficacy is under question. As a 164-country multilateral organisation dedicated to crafting rules of trade through consensus, WTO represents the optimal bet for developing countries such as India. Strengthening WTO is in India's best interest.

Perhaps the biggest threat to WTO's efficacy today is the attitude of the US. The world's largest economy appears to have lost faith in the organisation and has begun to undermine one of its most successful segments, the dispute redressal mechanism. This is significant as the US has been directly involved in nearly half of all cases brought to WTO. Separately, large groups of countries decided to pursue negotiations on e-commerce, investment facilitation and removal of trade obstacles for medium and small scale industries. By itself this should not weaken WTO. But it comes at a time when there is growing frustration with gridlock at WTO.

India did well to defend its position on its food security programme. The envisaged reform package which will see a greater use of direct cash transfers to beneficiaries will be in sync with what developed countries do. But it's important for India to enhance its efforts to reinvigorate WTO. In this context, India's plan to organise a meeting of some countries early next year is a step in the right direction. WTO represents the best available platform to accommodate interests of a diverse set of nations. Therefore, India should be at the forefront of moves to fortify it.

**114.** Why was the WTO's 11th binennial ministerial conference worrisome?
(1) Denial of states quo.
(2) Inability of negotiators to reach to substantive outcome for the problems.
(3) Rift in the policies suggested by WTO on IPR.
(4) Non-cooperation from Indian government on various matters.

**115.** What is the biggest threat to WTO's efficacy today?
(1) India being not working in its best interest.
(2) Lost of faith in WTO by US.
(3) Negotiators of WTO are not decision takers.
(4) WTO's lame attitude towards global trade.

**116.** Which of the following nation is keen to fortify its interest on WTO platform?
(1) USA (2) Japan
(3) Russia (4) India

**117.** Which of the following is the most successful segments of the WTO mentioned in the passage?
(1) Dispute redressal mechanism
(2) Intellectual Property Rights
(3) Reviewer of government's trade policies.
(4) Agreement on trade in services.

**118.** According to the passage, which of the following statement is **NOT** true?
(1) 11th WTO conference was held at Nairobi.
(2) India's take on food security programme in the WTO conference was positive.
(3) US is termed as the world's largest economy.
(4) US is involved directly in half of the cases brought to WTO

**Passage–II**
**(Q. No. 119–123)**

One should consciously engage in activities that will nourish your soul. Just as we nourish the body, we need to nurture the soul to connect to the creative power of the universe and to manifest joy in our lives. Often, we forget to address the soul, lost as we are in a jungle of material and sensual pleasures. But the more you embrace what feeds your soul, the happier you become. So if you want to enjoy the abundance of life, engage in what enriches your soul. Nurturing the soul is all about finding calm amidst chaos. There are a number of practices that empower people towards this end including silent contemplation, various forms of meditation, yoga and tai chi However, the rigor and discipline involved in the pursuit of such practices often seems to discourage people. Add to this, the temptations of the material world that leave little time and motivation for anyone to pursue the spiritual path. Poet Walt Whitman declared: "Whatever satisfies the soul is truth". The good news is that simple, everyday activities can also nutrify the soul — like spending time in the midst of nature, dancing in the rain or just putting thoughts on paper. Do whatever is calming and pleases you. Creative pursuits are particularly appealing as inside each one of us, there is an artist craving for release and awaiting an opportunity for expression. One of the ways to indulge the artist within is to get started with the practice of any one or more of the creative art forms such as music, singing, dancing, acting, drawing, painting, sculpting, poetry, fiction or essay writing.

When you engage in such soul nourishing activities, all thought and energy gets focused toward goal accomplishment. At this point, you will find that even unknown forces of the universe are conniving to assist you in your amateurish but sincere attempts. As you progress, you are motivated to do better. You touch and access a faculty, a part of you that you never knew existed. Your inner artist is unleashed, baring the beauty of your soul that has found a fond medium of expression. For instance, a sculptor's soul is seen in his artwork; a musician's in his compositions; an actor's in his acting, a painter's in his paintings and so on. It is immaterial whether your effort is an immaculate artwork or just a clumsy attempt by a layperson. The idea is to try, be inspired and to create giving free rein to the mind. As Michelangelo remarked: "I saw the angel in the marble and carved until I set him free"!

**119.** According to the passage, what makes us really happy?
(1) A soulful music.
(2) A soulful sculptures art.
(3) Freeing our mind.
(4) Embracing what feeds our soul.

**120.** According to the passage, why even our amateurish attempts motivate us?
(1) Because even unknown forces of the universe are assisting us in them.
(2) Because we never knew that this part ever existed inside us.
(3) Because these amateur attempts of ours are insincere ones.
(4) Because they still are clumsy and need improvement.

**121.** What activities can nutrify soul?
(1) Creative activities that needs your involvement.
(2) Any activity that doesn't touch the soul.
(3) Peaceful and calming activities.
(4) Immaculate artwork.

**122.** What can you infer from Michelangelo's statement - "I saw the angel in the marble and carved until I set him free"?
(1) Michelangelo's soul probably wanted to free the angel and hence his artwork portrayed the same.
(2) Michelangelo didn't like the angel and hence wanted to do away with it

(3) Michelangelo wanted his artwork to look as close to real as possible.

(4) Michelangelo's mind felt free after setting the angel free in his artwork.

**123.** Why do creative pursuits appeal us?

(1) They nutrify our souls.

(2) Inside each one of us, is an artist craving to come out.

(3) They identify beauty of our body.

(4) They are not simple activities.

**Passage–III**

**(Q. No. 124–128)**

The saddest part of life lies not in the act of dying, but in failing to truly live while we are alive. Too many of us play small with our lives, never letting the fullness of our humanity see the light of day. I've learned that what really counts in life, in the end, is not how many toys we have collected or how much money we've accumulated, but how many of our talents we have liberated and used for a purpose that adds value to this world. What truly matters most are the lives we have touched and the legacy that we have left. Tolstoy put it so well when he wrote : "We live for ourselves only when we live for others." It took me forty years to discover this simple point of wisdom.

Forty long years to discover that success cannot really be pursued. Success ensues and flows into your life as the unintended yet inevitable byproduct of a life spent enriching the lives of other people. When you shift your daily focus from a compulsion to survive towards a lifelong commitment to serve, your existence cannot help but explode into success. I still can't believe that I had to wait until the "half-time" of my life to figure out that true fulfillment as a human being comes not from achieving those grand gestures that put us on the front pages of the newspapers and business magazines, but instead from those basic and incremental acts of decency that each one of us has the privilege to practice each and every day if we simply make the choice to do so.

Mother Teresa, a great leader of human hearts if ever there was one, said it best : "There are no great acts, only small acts done with great love." I learned this the hard way in my life. Until recently, I had been so busy striving, I had missed out on living. I was so busy chasing life's big pleasures that I had missed out on the little ones, those micro joys that weave themselves in and out of our lives on a daily basis but often go unnoticed. My days were overscheduled, my mind was overworked and my spirit was underfed.

**124.** According to the passage, what does ''failing to truly live while we are alive means.''?

(1) End up thinking of death all our lives.

(2) Never letting the fullness of our humanity see the light of day.

(3) Focus on basic and incremental acts of decency.

(4) Over scheduling our days and over paying ourselves.

**125.** Suggest a suitable title for the passage?

(1) True happiness as experienced by Mother Teresa

(2) Forty years of discovery Tolstoy

(3) Living truly

(4) Learning it the hard way

**126.** According to the passage, what took Tolstoy forty years to discover?

(1) Simple point of happiness.

(2) That we live for ourselves only when we live for others.

(3) That his spirit was undeterred.

(4) That he was a great leader of human hearts.

**127.** What according to the passage is success?

(1) Success cannot be pursued.

(2) Success is an unintended yet inevitable by product of a life spent enriching the lives of others.

(3) Success is true fulfillment.

(4) Success is incremental act of decency.

**128.** According to the passage, what did Mother Teresa learned the hard way in her life?

(1) That there are no great acts, only small acts are done with great love.

(2) That she had been so busy striving that she had missed out on living.

(3) That her days were over scheduled and her mind was over worked.

(4) That she was so busy chasing life's big pleasures that she had missed out on the little one's.

**Passage–IV**

**(Q. No. 129–133)**

Teaching about compassion and empathy in schools can help deal with problems of climate change and environmental degradation," says Barbara Maas, secretary,

Standing Committee for Environment and Conservation, International Buddhist Confederation (IBC). She was in New Delhi to participate in the IBC's governing council meeting, December 10-11, 2017. "We started an awareness campaign in the year 2005-2006 with H. H The Dalai Lama when we learnt that tiger skins were being traded in China and Tibet. At that time, I was not a Buddhist; I wrote to the Dalai Lama asking him to say that 'this is harmful' and he wrote back to say, "We will stop this." He used very strong words during the Kalachakra in 2006, when he said, 'If he sees people wearing fur and skins, he doesn't feel like living. 'This sent huge shock waves in the Himalayan community. Within six months, in Lhasa, people ripped the fur trim of their tubba, the traditional Tibetan dress.

The messenger was ideal and the audience was receptive," says Maas who is a conservationist. She has studied the battered fox's behavioral ecology in Serengeti, Africa. She heads the endangered species conservation at the Nature and Biodiversity Conservation Union (NABU) International Foundation for Nature, Berlin. "I met Samdhong Rinpoche, The Karmapa, HH the Dalai

Lama and Geshe Lhakdor and I thought, if by being a Buddhist, you become like this, I am going for it, "says Maas, who led the IBC initiative for including the Buddhist perspective to the global discourse on climate change by presenting the statement, 'The Time to Act is Now: a Buddhist Declaration on Climate Change,' at COP21 in Paris.

"It was for the first time in the history of Buddhism that leaders of different sanghas came together to take a stand on anything! The statement lists a couple of important things : the first is that we amass things that we don't need; there is overpopulation; we need to live with contentment and deal with each other and the environment with love and compassion," elaborates Maas. She is an ardent advocate of a vegan diet because "consuming meat and milk globally contributes more to climate change than all "transport in the world."

Turning vegetarian or vegan usually requires complete change of perspective before one gives up eating their favorite food. What are the Buddhist ways to bring about this kind of change at the individual level? "To change our behavior, Buddhism is an ideal vehicle; it made me a more contented person," says Maas, who grew up in Germany, as a sausage chomping, meat-loving individual. She says, "If I can change, so can anybody".

**129.** According to the passage, how can studying compassion and empathy in schools help?
(1) It can help us understand and connect Buddhism.
(2) It can help deal with problems of climate change and environmental degradation.
(3) It can change our behaviours and make us more content person.
(4) It can help us in turning vegetarian.

**130.** Why is Ms. Barbara an ardent follower of vegan diet?
(1) She believes that "consuming meat and milk contributes more to climate change than all transport in the world".
(2) She believes that "turning vegan gives your skin an unmatchable glow and helps you stay away from diseases".
(3) She believes that "all living beings should be treated with love and compassion".
(4) She believes that "abstinence helps you win major battles of life".

**131.** What did HH Dalai Lama said to his followers which came as a blow to them?
(1) He said "we need to live with contentment and deal with each other and the environment with love and compassion.
(2) He said that if he sees people wearing fur and skins, he doesn't feel like living.
(3) He said Buddhism is an ideal vehicles it makes people more contented.
(4) He said "we need to live with contentment and deal with each other and the environment with love and compassion".

**132.** According to the passage, what do you infer from "The messenger was ideal and the audience was receptive"?
(1) It means that the audience found the messenger attractive and that they wanted to listen to him more and more.
(2) It means that audience's reaction goes hand in hand with the speaker's effectiveness.
(3) It means that HH Dalai Lama was a perfect choice of messenger for the message to be received by the audience.
(4) It means that messenger was tested and was working properly.

**133.** Why did Ms. Barbara Mass say "If I can change, so can anybody"?
(1) She never wanted to change but she still did, so anyone else can.
(2) She was a complete vegan but still turned non vegetarian.
(3) She did not believe in Buddhism but the religion attracted her.
(4) She grew up eating non vegetarian but turned vegan.

**Directions (134-138) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

**(134)** the course of the development of different life-forms heredity—which, in plain English, is unconscious memory generated in the first life-form and **(135)** through all the different species—is the sole factor in the **(136)** of the parent properties; while adaptation to surrounding conditions and circumstances, natural selection in the struggle **(137)** existence, and partner selection in the struggle of the males for **(138)** are the principal factors in the differentiation of species.

**134.** (1) Into (2) In (3) Inside (4) Onto

**135.** (1) transmit (2) transmitting (3) to transmit (4) transmitted

**136.** (1) preserve (2) preservable (3) preservation (4) preserving

**137.** (1) for (2) from (3) form (4) off

**138.** (1) females (2) feminity (3) feminine (4) woman

**Directions (139-143) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

It is a delight **(139)** the illuminating thoughts which came to the minds of these men; and, on the other hand, it is amusing to see how **(140)** they launched **(141)** on

boundless seas when they were unprovided with chart and compass. They were **(142)** brilliant children, who know little of the dangers of the great world, but are ready to undertake anything. These philosophers regarded all knowledge as their province, and did **(143)** despair of governing so great a realm.

**139.** (1) discover
(2) discovery
(3) rediscover
(4) to discover

**140.** (1) reckless
(2) recklessness
(3) recklessly
(4) reckful

**141.** (1) them
(2) their
(3) they
(4) themselves

**142.** (1) too (2) like
(3) that (4) so

**143.** (1) no (2) not
(3) nothing (4) none

**Directions (144-148) :** Read the passage carefully and choose the best answer to each question out of the four alternatives.

Doing an internship at the University of Lille in France, I almost always found myself stuck whenever I had to speak to non-Indians about India or on anything'Indian'. This was more because of the subtle differences in the way the French understood India in comparison to what I thought was 'Indian'. For instance, when I, or any Indian for that matter, say 'Hindi' is an Indian language, what it means is that it is one of the languages widely spoken in India. This need not be similar to the understanding that the French would have when they hear of 'Hindi' as an Indian language. Because for them Hindi then becomes the only language spoken in India. This is a natural inference that the French, Germans, Italians and many other European nationals would tend to make, because that is generally how it is in their own respective countries. The risk of such inappropriate generalisations made about 'Indian' is not restricted to language alone but also for India's landscape, cuisine, movies, music, climate, economic development and even political ideologies. The magnitude of diversity of one European country can be easily compared to that of one of the Indian State, isn't it? Can they imagine that India is one country whose diversity can be equated to that of the entire European continent? The onus is upon us to go ahead and clarify the nuances in 'Indianness' while we converse. But why should one do so? How does it even matter to clarify?

**144.** Why do some French people think that Hindi is the only Indian language?
(1) Because that is the way in most European countries.
(2) That is what is being taught to them.
(3) They know India is also called as Hindustan so people there must speak only Hindi.
(4) As most Indians they meet speak Hindi.

**145.** The writer was working at a university in which country?
(1) France (2) Germany
(3) Italy (4) India

**146.** What wrong with respect to India are the Europeans responsible for?
(1) Their hatred towards Indian culture.
(2) Their complete lack of knowledge regarding India's past.
(3) That India is economically decades behind the developed world.
(4) Their inappropriate generalizations.

**147.** The writer compares diversity of one European country to the diversity of _______.
(1) One major city in India
(2) One Indian State
(3) The whole continent of Asia
(4) The whole world

**148.** According to the writer the responsibility of explaining the facts about India to Europeans rests with?
(1) Europeans
(2) Indians
(3) Rest of the world
(4) Indian Government

**Directions (149–153) :** Read the passage carefully and choose the best answer to each question out of the four alternatives.

It was a bittersweet moment for me when I found out that I had been selected for the Sakura Science Exchange programme, a Robotics and IoT workshop in Japan.

A fully-funded opportunity of a lifetime. Fly off to Saitama without a care on the world, and all I had to do was put into practice what I love to do – computer science. The bitter part of the episode – that I would lose two weeks of IB education, an almost literal mountain to cover when I got back – was quickly forgotten when I envisioned myself programming robots in the country that gave us Anime and sushi! It was with the eagerness to have an extended vacation in an un-visited land, and the opportunity to learn more about a subject that I am passionate about, that I headed to the Kempegowda International Airport outside Bengaluru. Little did I know this would be the experience of a lifetime, more for the endearing values of the Japanese culture that made their mark on me than anything else. The first feature of Japanese society that called out to me was the Discipline. Walking into the Narita International Airport, used as I was to the noisy crowds back in India, I quite literally lost my breath to the sight that awaited me. Be it the security check or baggage claim, somehow there was a silence that felt right. Everyone went about their activities without any confusion. And, contrary to the bharatiya custom of lazy pot-bellied officials, every guard and all counter personnel did what they were supposed to do to ensure this flow was maintained.

**149.** What was it that the writer did not like about his trip to Japan?
(1) That the trip was so short
(2) That he would be compelled to eat sushi
(3) That he would miss a fortnight worth of IB education
(4) That Japanese people are too disciplined

**150.** What did the writer notice when he arrived at Narita International Airport?
(1) The bags arriving on time in baggage claim
(2) The cleanliness
(3) That there was no security check
(4) The silence

**151.** Why was the writer travelling to Japan?
(1) On a holiday
(2) For two weeks of IB education
(3) For employment
(4) To attend a robotics workshop

**152.** What aspect of Japanese culture left a mark on the writer?
(1) Their cuisine
(2) Their unity
(3) Their health consciousness
(4) Their values

**153.** Which country is credited for producing Anime?
(1) India (2) Japan
(3) China (4) USA

**Directions (154-180) :** In each of the following questions, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which bestexpresses the same sentence in Indirect/Direct speech.

**154.** The guide said to the tourists, "This will be the best day of your life."
(1) The guide told the tourists that this would be the best day of their lives.
(2) The guide told the tourists that that would be the best day of their lives.
(3) The guide told the tourists this that would be the best day of their lives.
(4) The guide told the tourists that this will be the best day of their lives.

**155.** The jeweller said to us, "These diamonds are polished here."
(1) The jeweller informed us that these diamonds were polished there.
(2) The jeweller informed us that those diamonds were polished there.
(3) The jeweller informed us that those diamonds were polished here.
(4) The jeweller informed us that these diamonds were polished here.

**156.** He said to the doctor, "How soon will I be able to walk again?"
(1) He asks the doctor how soon would I be able to walk again.
(2) He asked the doctor how soon would he be able to walk again.
(3) He is asking the doctor how soon would I be able to walk again .
(4) He asks the doctor how soon will he be able to walk again.

**157.** My father said to me, "Don't talk to your mother like that."
(1) My father warns me not to talk to my mother like that.
(2) My father warned me not to talk to my mother like that .
(3) My father warned me not to have talked to my mother like that.
(4) My father warns me not to have talked to my mother like that.

**158.** The old man said to me, "Life has taught me some hard lessons."
(1) The old man tells me that life has taught him some hard lessons.
(2) The old man told me this that life has had taught him some hard lessons.
(3) The old man tells me that life is teaching him some hard lessons.
(4) The old man told me that life had taught him some hard lessons.

**159.** The groom said to the bride, "I will take good care of you."
(1) The groom promised the bride that he would take good care of her.
(2) The groom has promised the bride that he will be taking good care of her.
(3) The groom had promised the bride that he would have taken good care of her.
(4) The groom promises the bride that he would take good care of her.

**160.** He said to his partner, "I will not be responsible if the project fails."
(1) He has told his partner that he will not be responsible if the project fails.
(2) He told his partner that he would not be responsible if the project failed.
(3) He tells his partner that he would not be responsible if the project fails.
(4) He told his partner that I will not be responsible if the project failed.

**161.** I said to my father, "I want to build a raft which can hold four people ."
(1) I told my father that I am wanting to build a raft which could hold four people.
(2) I told my father that that I wanted to build a raft which could hold four people.
(3) I told my father that that I am wanting to build a raft which could hold four people.
(4) I told my father that I wanted to build a raft which could hold four people.

**162.** The manager said "Vivek must go tomorrow to meet the client".
(1) The manager said that Vivek must have to go the following day to meet the client.
(2) The manager said that Vivek will have to go tomorrow to meet the client.
(3) The manager said that Vivek must go the following day to meet the client.
(4) The manager said that Vivek must be going tomorrow to meet the client.

**163.** Aunt said to mother, "I will be in Surat on Friday."
(1) Aunt told mother that she will be in Surat on Friday.
(2) Aunt told mother she would be in Surat on Friday.
(3) Aunt told mother she will be in Surat on Friday.
(4) Aunt told mother that she would be in Surat on Friday.

**164.** My brother said, "I can climb this hill in less than an hour."
(1) My brother claimed that he can climb that hill in less than an hour.
(2) My brother claimed that he could climb this hill in less than an hour .
(3) My brother claimed that he can climb this hill in less than an hour.
(4) My brother claimed that he could climb that hill in less than an hour.

**165.** My son said to me, "I will not disappoint you."
(1) My son tells me that he will not disappoint me.
(2) My son tells me that he will not be disappointing me.
(3) My son told me that he would not disappoint me.
(4) My son had told me that he would not be disappo inting me.

**166.** The officer said, "I am very busy now".
(1) The officer said that he was very busy now.
(2) The officer said that he is very busy then.
(3) The officer said that he is very busy now.
(4) The officer said that he was very busy then.

**167.** "I am proud of you," father said to me.
(1) Father told me that he is proud of me.
(2) Father told me that he was proud of me.
(3) Father told me this that he was proud of me.
(4) Father told me that that he is proud of me.

**168.** "The taxi is here," said the watchman.
(1) The watchman said that the taxi is there.
(2) The watchman said that the taxi was here .
(3) The watchman said that the taxi is here.
(4) The watchman said that the taxi was there.

**169.** The student said, "I must study hard."
(1) The student said that he had to study hard.
(2) The student says that he had to study hard.
(3) The student says that he must study hard.
(4) The student say that he had to study hard.

**170.** Preeti said to her friend, "I am like my mother."
(1) Preeti told her friend that she was like her mother.
(2) Preeti told her friend that I was like her mother.
(3) Preeti tells her friend that she is like her mother.
(4) Preeti tells her friend that that she was like her mother.

**171.** My brother said to me, "I was upset, but now I am fine."
(1) My brother told me that he was upset, but now he was fine.
(2) My brother told me that he had been upset, but then he will be fine.
(3) My brother told me that he had been upset, but then he was fine.
(4) My brother told me that he has been upset, but then he is fine.

**172.** My friend said to me, "For me running is like therapy."
(1) My friend told me this that for her running is like therapy.
(2) My friend told me that for her running was like therapy.
(3) My friend told me that for her having ran was like therapy.
(4) My friend tells me that for her running is like therapy.

**173.** I said to the taxi driver, "You must be crazy to drive so fast."
(1) I said to the taxi driver that he has to be crazy to drive so fast.
(2) I told the taxi driver that he had to be crazy to drive so fast.
(3) I had told the taxi driver that he has to be crazy to drive so fast.
(4) I had said to the taxi driver that he has to be crazy to be driving so fast.

**174.** The teacher said to me, "Stand here next to the podium."
(1) The teacher tells to me to stand there next to the podium.
(2) The teacher told to me to have stood there next to the podium.
(3) The teacher told me to stand there next to the podium.
(4) The teacher had told to me to have stood there next to the podium.

**175.** He said to her, "I will meet you here tomorrow."
(1) He told her this that he will meet her there the following day.
(2) He told her that he would meet her there the following day.
(3) He told her that he would meet her here tomorrow.
(4) He told her that he will meet her there tomorrow.

**176.** She said to her friend, "What can I do to help you?"
(1) She asked her friend that what she can do to help her.
(2) She asked her friend what she could do to help her.
(3) She asks her friend what is that she could do to help her.
(4) She asks her friend what she can do for helping her.

**177.** Manoj said to his friend, "I am very angry with you."
(1) Manoj told his friend that he was very angry with him.

(2) Manoj told his friend that he is very angry with him.
(3) Manoj told his friend that he was very angered by him.
(4) Manoj told his friend that he is very angered by him.

**178.** "Hurry up, get in the bus" the conductor said to us.
(1) The conductor told us to hurry up and get in the bus.
(2) The conductor tells us to hurry up and get in the bus.
(3) The conductor told us to hurry up and got in the bus.
(4) The conductor tells us to hurry up and got in the bus.

**179.** "My train will reach by noon," he explained.
(1) He explained that his train will reach by noon.
(2) He explained that his train would reach by noon.
(3) He explained that his train will have reached by noon.
(4) He explained that his train would have had reached by noon.

**180.** I said to my wife, "These showpieces look nice."
(1) I told my wife that these showpieces looked nice.
(2) I told my wife that those showpieces looked nice.
(3) I told my wife that those showpieces look nice.
(4) I told my wife that these showpieces look nice.

**Directions (181–200) :** In each of the following questions, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

**181. You have to finish painting this fence by Friday.**
(1) This fence has to be finished painting by you by Friday.
(2) This fence is to be finishing painted by you by Friday.
(3) Painting of this fence has to be painted by you by Friday.
(4) By Friday you will have finished painting the fence.

**182. The dealer will service the scooter for free the first three times.**
(1) The scooter will be serviced for free by the dealer for the first three times.
(2) The scooter was serviced for free by the dealer for the first three times.
(3) For the first three times, the dealer will service the scooter for free.
(4) Servicing of the scooter for free will be done by the dealer for the first three times.

**183. The manager gave her a negative feedback during her performance appraisal.**
(1) A negative feedback was given to her by the manager during her performance appraisal.
(2) The manager will give her negative feedback during her performance appraisal.
(3) A negative feedback is being given to her by the manager during appraising her performance.
(4) Giving of a negative feedback to her during her performance appraisal has been done by the manager.

**184. The General presented us a detailed battle plan.**
(1) A detailed battle plan will be presented to us by the General.
(2) The General presents us a detailed battle plan.
(3) A detailed battle plan was presented to us by the General.
(4) Presenting of a detailed battle plan was being done by the General to us.

**185. For how long will you keep neglecting your duties.**
(1) For how long have you kept neglecting your duties.
(2) For how long do your duties need to be neglected by yourself.
(3) For how long will your duties be kept neglected by you.
(4) Neglecting of the duties by you have been going on since how long.

**186. The doctor has given me a very painful injection.**
(1) A very painful injection has been given to me by the doctor.
(2) The doctor gives myself a very painful injection.
(3) A very painful injection is being given to me by the doctor.
(4) Giving of a painful injection to me has been done by the doctor.

**187. Uncle always welcomes us to his home with a big smile.**
(1) We are always welcomed by uncle to his home with a big smile.
(2) Uncle is always welcoming us to his home with a big smile.
(3) A big smile is used by uncle always when he is welcoming us.
(4) Welcoming by uncle with a big smile to us is always done.

**188. The speeding car knocked down the pedestrian.**
(1) The car which was speeding has knocked down the pedestrian.
(2) The pedestrian was knocked down by the speeding car.
(3) The pedestrian was being knocked down by the car which was speeding.
(4) Knocking down of the pedestrian has been done by the speeding car.

**189. I am sure she will like you.**
(1) I am sure you were liked by her.
(2) She, I am sure shall like you.

(3) Liking of you by her is a surety by me.
(4) I am sure you will be liked by her.

**190. I rarely watch action movies.**
(1) Action movies are rarely watched by myself.
(2) Action movies are rarely watched by me.
(3) I had rarely watched action movies.
(4) Watching of action movies is rarely done by me.

**191. His behaviour embarrasses me.**
(1) His behaviour is embarrassing for me.
(2) I am embarrassed by his behaviour.
(3) I am myself embarrassed by his behaviour.
(4) Embarrassing of myself is done by his behaviour.

**192. She ate the sweets greedily.**
(1) Greedily sweets are eaten by her.
(2) She herself ate the sweets greedily.
(3) Eating of the sweets was done by her greedily.
(4) The sweets were eaten by her greedily.

**193. She will never tell you the truth.**
(1) You will never be told the truth by her.
(2) She shall never be telling you the truth.
(3) You were never be told the truth by her.
(4) Telling of the truth to you be her will never be done.

**194. You need to offer them a better deal.**
(1) They are in need of being offered a better deal by yourself.
(2) They need to be offered a better deal by you.
(3) A better deal is needed by them and you have to offer it.
(4) The offering of a better deal has to be done by you for their need.

**195. You are making your life more difficult.**
(1) Your life is being made more difficult by you.
(2) You yourself make your life more difficult.
(3) Your life had been made more difficult by you yourself.
(4) Making of your life more difficult has been done by yourself.

**196. Mother needs your help in the kitchen.**
(1) In the kitchen mother needs help by yourself.
(2) Your helping is needed by mother in the kitchen.
(3) Your help is needed by mother in the kitchen.
(4) Needing of your help is done by mother in the kitchen.

**197. She always took her medicines on time.**
(1) The medicines was always took on time by her.
(2) The medicines were always taken on time by her.
(3) On time medicines she always took.
(4) Taking of the medicines on time was being done by her.

**198. I have flown this plane for seven years.**
(1) This plane is flying me for seven years.
(2) I am flying this plane for seven years.
(3) Seven years have happened since I have been flying this plane.
(4) This plane has been flown by me for seven years.

**199. Who has composed this song?**
(1) This song will be composed by whom?
(2) Who composes this song?
(3) Composing of this song has been done by who?
(4) This song has been composed by whom?

**200.** The organisers will give you a certificate.
(1) A certificate will be given to you by the organisers.
(2) The organisers had given you a certificate.
(3) You were given a certificate by the organisers.
(4) Giving of certificate to you was done by organisers.

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (2) | **2.** (3) | **3.** (1) | **4.** (4) |
| **5.** (3) | **6.** (3) | **7.** (2) | **8.** (4) |
| **9.** (3) | **10.** (2) | **11.** (4) | **12.** (3) |
| **13.** (2) | **14.** (2) | **15.** (1) | **16.** (4) |
| **17.** (2) | **18.** (3) | **19.** (3) | **20.** (2) |
| **21.** (4) | **22.** (2) | **23.** (2) | **24.** (3) |
| **25.** (2) | **26.** (3) | **27.** (2) | **28.** (3) |
| **29.** (4) | **30.** (1) | **31.** (3) | **32.** (4) |
| **33.** (2) | **34.** (1) | **35.** (2) | **36.** (1) |
| **37.** (2) | **38.** (1) | **39.** (3) | **40.** (1) |
| **41.** (3) | **42.** (3) | **43.** (2) | **44.** (2) |
| **45.** (1) | **46.** (1) | **47.** (2) | **48.** (1) |
| **49.** (1) | **50.** (3) | **51.** (3) | **52.** (1) |
| **53.** (1) | **54.** (1) | **55.** (3) | **56.** (2) |
| **57.** (1) | **58.** (2) | **59.** (3) | **60.** (4) |
| **61.** (3) | **62.** (1) | **63.** (4) | **64.** (2) |
| **65.** (3) | **66.** (4) | **67.** (1) | **68.** (2) |
| **69.** (3) | **70.** (4) | **71.** (3) | **72.** (1) |
| **73.** (2) | **74.** (4) | **75.** (3) | **76.** (3) |
| **77.** (4) | **78.** (1) | **79.** (4) | **80.** (2) |
| **81.** (2) | **82.** (1) | **83.** (3) | **84.** (4) |
| **85.** (1) | **86.** (3) | **87.** (2) | **88.** (1) |
| **89.** (4) | **90.** (2) | **91.** (4) | **92.** (3) |
| **93.** (1) | **94.** (2) | **95.** (3) | **96.** (2) |
| **97.** (1) | **98.** (2) | **99.** (3) | **100.** (1) |
| **101.** (2) | **102.** (3) | **103.** (1) | **104.** (2) |
| **105.** (3) | **106.** (1) | **107.** (2) | **108.** (2) |
| **109.** (3) | **110.** (1) | **111.** (2) | **112.** (3) |
| **113.** (1) | **114.** (2) | **115.** (2) | **116.** (4) |
| **117.** (1) | **118.** (1) | **119.** (4) | **120.** (1) |
| **121.** (3) | **122.** (1) | **123.** (2) | **124.** (2) |
| **125.** (3) | **126.** (2) | **127.** (2) | **128.** (1) |
| **129.** (2) | **130.** (1) | **131.** (2) | **132.** (3) |
| **133.** (4) | **134.** (2) | **135.** (4) | **136.** (3) |
| **137.** (1) | **138.** (1) | **139.** (4) | **140.** (3) |
| **141.** (4) | **142.** (2) | **143.** (2) | **144.** (1) |
| **145.** (2) | **146.** (4) | **147.** (2) | **148.** (2) |
| **149.** (3) | **150.** (4) | **151.** (4) | **152.** (4) |
| **153.** (2) | **154.** (2) | **155.** (2) | **156.** (*) |
| **157.** (2) | **158.** (4) | **159.** (1) | **160.** (2) |
| **161.** (4) | **162.** (3) | **163.** (4) | **164.** (4) |
| **165.** (3) | **166.** (4) | **167.** (2) | **168.** (4) |
| **169.** (1) | **170.** (1) | **171.** (3) | **172.** (2) |
| **173.** (2) | **174.** (3) | **175.** (2) | **176.** (2) |
| **177.** (1) | **178.** (1) | **179.** (2) | **180.** (2) |
| **181.** (1) | **182.** (1) | **183.** (1) | **184.** (3) |
| **185.** (3) | **186.** (1) | **187.** (1) | **188.** (2) |
| **189.** (4) | **190.** (2) | **191.** (2) | **192.** (4) |
| **193.** (1) | **194.** (2) | **195.** (1) | **196.** (3) |
| **197.** (2) | **198.** (4) | **199.** (4) | **200.** (1) |

## EXPLANATIONS

1. (2) **Guzzle (Verb)** = eat hungrily or greedily; to drink quickly, eagerly and usually in large amounts; imbibe.
   **Look at the sentence :**
   He guzzled his beer and ordered another.
   **Sip (Verb)** = drink slowly.
   **Starve (Verb)** = to cause someone to become very weak or die because there is not enough food to eat.
2. (3) **Hound (Noun/Verb)** = hunting dog; mongrel; beagle/ harass; pursue relentlessly.
   **Look at the sentences :**
   The reporters wouldn't stop hounding her.
   Before the runner sets off, he is put in an enclosed space with the hounds that then track his scent.
   **Migrate (Verb)** = to travel in large numbers to a new place to live temporarily; roam; wander.
   **Critic (Noun)** = someone who says that they do not approve of someone or something; fault-finder.
3. (1) **Embargo (Noun)** = an official ban on trade or other commercial activity; barrier.
   **Look at the sentence :**
   They have put an embargo on imports of clothing.
   **Prescribe (Verb)** = lay down; specify; determine.
4. (4) **Swindle (Noun/Verb)** = a fraudulent action; fraud; deception; dupe; to get money dishonestly.
   **Honesty (Noun)** = uprightness; integrity; morality; the quality of being honest.
   **Look at the sentences.**
   They swindled local businesses out of thousands of dollars.
   Fraud squad officers are investigating a $ 5.9 million swindle.
   I must tell you in all honesty that there is little chance of the proposal being approved.
   **Insert (Verb)** = to put something inside something else; to add writing to a text etc.
   **Ample (Adjective)** = enough; sufficient.
5. (3) **Vista (Noun)** = a pleasing view, prospect; panorama; perspective; imagination.
   **Blindness (Noun)** = inability to see.
   **Look at the sentences.**
   After a hard climb, we were rewarded by a picture-post card vista of rolling hills under a deep blue sky.
   Doctors think he has a partial blindness.
   **Confront (Verb)** = challenge; tackle; face.
   **Contour (Noun)** = outline; shape.
   **Outlook (Noun)** = point of view; stance; stand point.
6. (3) **Tempestuous (Adjective)** = turbulent; stormy, wild; unrestrained.
   **Calm (Adjective)** = tranquil; quiet; peaceful.
   **Look at the sentences :**
   He had a reckless and tempestuous streak.
   Now keep calm everyone, the police are on their way.
   **Stress (Noun/Verb)** = pressure; tension/emphasize.
   **Toil (Noun/Verb)** = hard work, work hard; work incessantly.
7. (2) **Whoop it up** = enjoy oneself or celebrate in a noisy way; rejoice; make merry.
   **Look at the sentence :**
   The team really whooped it up in the locker room after their big win.
8. (4) **With a vengeance** = used to emphasize the degree to which something occurs or is true; vigorously; with great force.
   **Look at the sentence :**
   He has been working with a vengeance over the past few weeks to make up for lost time.
9. (3) **Up against the wall** = in serious difficulties; in an inextricable situation.
   **Look at the sentence :**
   It is when you are up against the wall that your true character shows.
10. (2) **Reap the whirlwind** = to suffer the negative consequences of one's actions.
    **Look at the sentence :**
    If you don't do your homework now, you will reap the whirlwind when you have to take your final exam.
11. (4) **Of the first water** = of the best quality; having the utmost value.
    **Look at the sentence :**
    The restaurant is renowned for serving food of the first water.
12. (3) **Weather the storm** = successfully deal with a very difficult problem.
    **Look at the sentences :**
    In the next few days we will see if the ambassador can weather the political storm caused by his remarks.
13. (2) **Spin your wheels** = to waste time doing things that achieve nothing.
    **Look at the sentence :**
    If we are just spinning our wheels, let's know and we'll quit.
14. (2) **Wear the green willow** = to grieve for lost or unrequited love.
    **Look at the sentence :**
    My grandmother has been wearing the green willow ever since my grandfather died.
15. (1) **Wild and woolly** = exciting; uncouth in appearance or behaviour.
    **Look at the sentence :**
    Things get a little wild and woolly on a Friday evening at Connaught place.
16. (4) **Give it a whirl** = to try something; to attempt to do something, often for the first time.
    **Look at the sentence :**
    I have never danced Salsa before but I'll give it a whirl.

**17.** (2) **Matricide** = the killing of one's mothers.
**Patricide** = the killing of one's father.
**Sororicide** = the killing of one's sister.

**18.** (3) **Biloquist** = a person having the ability of speak in two different voices.
**Philologist** = the study of literature and of disciplines relevant to literature.
**Oculist** = an ophthalmologist or optician.

**19.** (3) **Kratocracy** = a government established by seizure utilizing force or deceit with rule maintained by strength.
**Pantisocracy** = a form of utopian social organisation in which all are equal in social position and responsibility.
**Mobocracy** = rule by the masses.

**20.** (2) **Ethnomania** = a passion for ethnic or racial autonomy
**Egomania** = the state of considering yourself to be very important.
**Idolomania** = a mania/passion for idols.

**21.** (4) **Prognosis** = the likely course of a medical condition.
**Elegy** = a poem of serious reflection; funeral poem.
**Memoir** = a historical account or biography.

**22.** (2) **Equivorous/omnivorous** = feeding on a variety of food of both plant and animal origin.
**Carnivorous** = feeding on other animals.
**Fructivorous** = fruit–eating.

**23.** (2) **Herbicide** = a chemical that is used to destroy plants, especially weeds.
**Vulpicide** = the act of killing a fox other than by hunting with hounds.

**24.** (3) **Paedophilia** = the condition of being sexually attracted to children.
**Sinophile** = a person who demonstrates strong interest and love for Chinese culture.
**Zoophilia** = having an affinity for animals.

**25.** (2) **Iconomachy** = opposition to the worship of images or icons.
**Shag** = a carpet or rug with a long rough pile.
**Clergy** = the body of all people ordained for religious duties.

**26.** (3) **Philology** = the study of language in oral and written historical sources.
**Phrenology** = the study of the size and shape of people's heads.
**Urology** = surgical speciality that deals with the treatment of urinary tract.

**27.** (2) **Lithophilous** = growing or living in stony places.
**Topophilia** = strong sense of place or emotional connections with physical environment.
**Homophile** = relating to homosexuals.

**28.** (3) **Soliloquy** = an act of speaking one's thoughts aloud.
**Obloquy** = strong public condemnation.
**Eloquence** = fluent or persuasive speaking or writing.

**29.** (4) **Pandemonium (Noun)** = wild and noisy disorder or confusion.
**Declension (Noun)** = a condition of decline.
**Labyrinth (Noun)** = a complicated irregular network of passages or paths in which it is difficult to find one's way.
**Quintessence (Noun)** = perfect example.

**30.** (1) **Irrepressible (Adjective)** = not able to be controlled or restrained.
**Irrefutable (Adjective)** = indisputable; undeniable.
**Irrevocable (Adjective)** = not able to be changed; final.
**Irresistible (Adjective)** = too attractive and tempting to be resisted; tempting.

**31.** (3) **Clairvoyance (Noun)** = second sight; perception.
**Ascendance (Noun)** = governing or controlling influence; domination.
**Acquaintance (Noun)** = knowledge or experience of something, familiarity.
**Countenance (Noun)** = facial expression; profile.

**32.** (4) **Apprehensive (Adjective)** = anxious or fearful that something bad or unpleasant will happen.
**Regressive (Adjective)** = returning to a former or less developed state.
**Neoconservative (Noun)** = a conservative who advocates the assertive promotion of democracy.
**Aggressive (Adjective) =** belligerent; violent; argumentative.

**33.** (2) **Intriguing (Adjective)** = very interesting because of being unusual.
**Discriminating (Adjective)** = making a distinction; distinguishing.
**Boring (Adjective)** = not interesting; tedious.
**Befooling (Adjective)** = making a fool of somebody.

**34.** (1) **Evaluation (Noun)** = assessment; appraisal.
**Completion (Noun)** = the action of completing or finishing something.

**35.** (2) **Reveal (Verb)** = make known to others; disclose.
**Wheal (Noun)** = a suddenly formed elevation of the skin surface.
**Vineal** = of or relating to grapes or grapevines.

**36.** (1) **Method (Noun)** = procedure; technique.
**Goal (Noun)** = aim; objective
**Suspect (Noun)** = a person thought to be guilty of a crime or offence.

**37.** (2) Here, Present perfect (= subject + have/has + not + $V_3$) i.e. exporting, they have not researched the ..... should be used. Other clause is in Present Perfect.

**38.** (1) Here, the part of what a man learns is measured .... should be used. Here, doer is Passive. Hence, Passive Voice will be used. Certainty is evident. Hence, 'The' should be used.

**39.** (3) Any is used with uncountable or plural nouns in negative sentences.
Hence, counter with a significant .... should be used here.

**40.** (1) For two objects, between is used. Hence, There is a barrier between the ..... should be used here.

**41.** (3) It is a preposition related error. Hence, financing and paying to/for.... should be used here.
**Pay for something** = He pays Rs. 500 a week for this apartment.
I don't pay you to sit around.

**42.** (3) Here, present is relevant. Generality is evident. Hence, Present Tense i.e. and some are industrious ..... should be used here.

**43.** (2) Here, often wading .... has been used. Hence, Gerund i.e. swamps or passing through.... should be used.

**44.** (2) In the end = at last; after a long period of time or series of events.
Hence, years, in the end he proved .... should be used here.

**45.** (1) Here, Modern medicines (plural) **have** scored .... should be used. Plural subject agrees with plural verb.
Modern medicine has .... is also correct usage.

**46.** (1) **Look at the structure :**
If + Past Simple + Subject + Would + be + Adjective.
Hence, If life existed on Mars, it would most likely be in ..... should be used here.

**47.** (2) Here, Active voice i.e. or will it retain .... should be used. Doer is active.

**48.** (1) **Priestly** = connected with a priest.
Hence, The priestly (Adjective) class took upon themselves (itself) ... should be used.

**49.** (1) **Think of doing something** = to consider doing something.
She is thinking of changing her job.
Hence, he thought of politics ..... should be used here.
**Right (Adverb)** = Exactly.
**Rightly (Adverb)** = for a good reason; justifiably.

**50.** (3) It is a preposition related error. Hence, in the process, the reservation in jobs.... should be used here.

**51.** (3) Past is evident. Hence, negotiations were completed .... should be used here.

**52.** (1) **Look at the structure of Future Simple :**
Subject + Shall/will + $V_1$
Hence, This will explain... should be used here.

**53.** (1) **Root** = the origin or basis of something; connection with a place.
After 20 years in London, I still feel my roots are in America.
Hence, He built the theatre as a tribute to his roots.... should be used here.

**54.** (1) Past relates to the present. Hence, Present Perfect i.e. As several studies have shown over ..... should be used here.

**55.** (3) Here, Gerund i.e. with zero tolerance to anyone/any violating rule or to anyone who violates.... should be used.

**56.** (2) **Look at the structure :**
Subject + would have/should have + been + $V_3$.
Hence,..... it should have been provided..... should be used here.

**57** (1) **Govern (Verb)** = rule; exercise; control over.
**Reject (Verb)** = cancel
**Deject (Verb)** = make sad or dispirited.
**Retain (Verb)** = keep possession of.

**58.** (2) **Cripple (Verb)** = ruin; destroy; immobilize.
**Grapple (Verb)** = engage in a close fight; struggle.
**Stripple (Verb)** = mark a surface with numerous small dots or specks.
**Scruple (Verb)** = hesitate or be reluctant to do something.

**59.** (3) **Imperialism (Noun)** = rule by an emperor.
**Absenteeism (Noun)** = the practice of regularly staying away from work.
**Dogmatism (Noun)** = assertiveness.

**60.** (4) **tolerate (Verb)** = to accept without any disagreement.
**Abate (Verb)** = become less intense; subside.
**Confiscate (Verb)** = seize with authority.
**Assimilate (Verb)** = take in and understand fully.

**61.** (3) **Integrity (Noun)** = the state of being whole and undivided.
**Accountability (Noun)** = responsibility; answerability.
**Vulnerability (Noun)** = the state of being exposed the possibility of harm.

**62.** (1) **Deeds (Noun)** = acts, actions, activities.
**Creed (Noun)** = a system of religious belief.
**Breed (Noun)** = variety; stock.

**63.** (4) **Predisposition(s) (Noun)** = susceptibility; tendency; inclination.
**Avocation (Noun)** = a hobby or minor occupation.

**64.** (2) **Propensity (Noun)** = tendency; inclination.
**Immensity (Noun)** = an extremely large size.

**65.** (3) **Shaped (Adjective)** = having a defined external form.

**66.** (4) **Modify (Verb)** = alter; make minor changes to something.
**Petrify (Verb)** = ossify; change into a stony substance.
**Clarify (Verb)** = make clear; shed light on.

**67.** (1) **Adversely (Adverb)** = in a way that prevents success or development; unfavourably.
**Ultimately (Adverb)** = finally; in the end.
**Moderately (Adverb)** = to a certain extent; fairly; rather.

**68.** (2) **At will** = as one pleases or wishes.

**69.** (3) **Gain (Verb)** = to obtain or secure; alquire.
**Sustain (Verb)** = help; assist; support; strengthen.

**70.** (4) **Lay (Verb)** = put down gently or cearefully.

**71.** (3) **Perpetrate (Verb)** = to commit a crime or a harmful act.
**Interpret (Verb)** = to explain
**Interpretation (Noun)** = Explanation.

**92.** (3) **Look at the structure :**
Subject + would + not + $V_1$.
Hence, not make economic sense.... should be used here.

**93.** (1) **Norm (Noun)** = standard; something that is usual.
Hence, is the norm (Noun) .... should be used here.

**94.** (2) Here, Present participle (Adjective) i.e.
**offending** = that offends .... should be used.
**Offend (Verb)** = commit an illegal act.

**95.** (3) Expectation is evident. Hence, Future Simple i.e. will come..... should be used here.

**96.** (2) Look at the structure of Present Progressive (Passive) :
Subject + is/am/are + being + + $V_3$.
Hence, It is being seen ..... should be used here.

**97.** (1) Here, appropriate position of only is needful.
Second only to Paris = second after Paris.

**98.** (2) **Illegal (Adjective)** = contrary to or forbidden by law.

**99.** (3) Here, instead of creating a new regulation ..... should be used.
**Regulation (Noun)** = order; rule; statute.

**100.** (1) Here, infinitive = to + $V_1$ i.e. made to learn to identify ..... should be used.

**101.** (2) Here, Passive (Progressive) i.e. being used independently ..... should be used. Have/had/has is followed by been.

**102.** (3) Here, help should be followed by bare infinitive or preposition + Noun.
Hence, both travel and nutrition ..... should be used.

**103.** (1) To qualify a Noun, an Adjective is used. Hence, a miraculous (Adjective) diet (Noun) should be used here.

**104.** (2) Here, Subject (the centre's bid is singular. Hence, singular verb i.e. has been helped ($V_3$) should be used here.

**105.** (3) For non-livings. Relative pronoun 'which' .... should be used.
**Which** is used to be exact about a thing or thing that you mean.

**106.** (1) **Have a voice** = Have the right or power to influence or make a decision about something.

**107.** (2) **Soon** = in a short-time from now.
**Look at the sentence :**
She sold the house **soon after** her husband died.
Hence, **as** is not needful.

**108.** (2) Structure of sentence in Present Perfect :
Subject + has/have + $V_3$
Hence, They have held should be used here.
**Hold** = to have a belief or an opinion about something.

**109.** (3) **No** = not one; not any
No student (Noun) is to leave the room.
Not is used to form the negative of the verbs.

**110.** (1) Subject + should/would + $V_1$.
Hence, or guide it further should be used here.

**111.** (2) Structure of **May** in Passive :
Subject + may be + $V_3$.
Hence, may be put forth should be used here.
**Put forth** = to suggest an idea for consideration.

**112.** (3) **Across** = from one side to the other of an area.
**Over** = extending directly upwards from.
**Look at the sentence :**
I saw flames over London.
Hence, across the state .... should be used here.

**113.** (1) **Pit somebody/something against somebody/something** = to cause one person, group or thing to fight against or be in competition with another.
**Look at the sentence :**
The climbers pitted themselves against the mountain.
The sentence shows Past time. Hence, people were pitted against .... should be used here.

**134.** (2) **In the course of** = during the specified period or activity.

**135.** (4) Here, past participle i.e. transmitted should be used as **generated** has come before **and**.
**Transmit (Verb)** = cause to pass on from onething to another.

**136.** (3) **Preservation (Noun)** = conservation; protection.
Here, **Noun** should be used.

**137.** (1) Fish struggle **for** survival when the water level drops in the lake.

**138.** (1) Males and females are antonymous.

**139.** (4) Here, infinitive will be used. Objective is evident.

**140.** (3) Here, Adverb will be used that modifies an action.
**Recklessly (Adverb)** = without care.

**141.** (4) Here, Reflexive pronoun (themselves) .... should be used.

**142.** (2) **Like** = similar to, the same as.

**143.** (2) Subject + did not + $V_1$.
Hence, **not** will be used here.

**154.** (2) Said to ⇒ told
Connective ⇒ that
This ⇒ that
Will be ⇒ would be

**155.** (2) Said to ⇒ informed
Connective ⇒ that
These ⇒ Those
Present Tense ⇒ Past Tense.

**156.** (*) Said to ⇒ asked
How soon will I ..... ⇒ how soon he would be able to walk again.
Interrogative ⇒ Assertive

**157.** (2) Said to ⇒ warned
Don't ⇒ not to
Your ⇒ my

**158.** (4) Said to ⇒ told
Connective ⇒ that
Present Perfect ⇒ Past Perfect
Pronouns change according to
S O N
1 2 3

**159.** (1) Said to ⇒ promised
Connective ⇒ that
I will ... ⇒ he would

**160.** (2) Said to ⇒ told
Connective ⇒ that
Future Simple ⇒ Past Simple
Present Simple ⇒ Past Simple (failed).

**161.** (4) Said to ⇒ told
Connective ⇒ that
Simple Present ⇒ Past Simple

**162.** (3) Connective ⇒ that
Tomorrow ⇒ the next day/following day.

**163.** (4) Said to ⇒ told
Connective ⇒ that
She will be... ⇒ she would be..

**164.** (4) Claim is evident.
Said ⇒ claimed
Connective ⇒ that
I can... ⇒ he could

**165.** (3) Said to ⇒ told
Connective ⇒ that
I will .... ⇒ he would
Pronouns change according to
S O N
1 2 3

**166.** (4) Connective ⇒ that
I am ⇒ he was
Now ⇒ then

**167.** (2) Said to ⇒ told
Connective ⇒ that
I am ⇒ he was
Pronouns change according to
S O N
1 2 3

**168.** (4) Connective ⇒ that
Present Tense ⇒ Past Tense
Here ⇒ there

**169.** (1) Connective ⇒ that
Must ⇒ had to
Pronouns change as per
S O N
1 2 3

**170.** (1) Said to ⇒ told
Connective ⇒ that
Present Tense ⇒ Past Tense
Pronouns change as per
S O N
1 2 3

**171.** (3) Said to ⇒ told
Past Simple ⇒ Past Perfect
Connective ⇒ that
Pronouns change as per
S O N
1 2 3

**172.** (2) Said to ⇒ told
Connective ⇒ that
Present Tense ⇒ Past Tense

**173.** (2) Said to ⇒ told
Connective ⇒ that
Must be ⇒ had to be
Pronouns change as per
S O N
1 2 3.

**174.** (3) Said to ⇒ told
Connective ⇒ that
Connective ⇒ to (+ $V_1$)

**175.** (2) Said to ⇒ told
Connective ⇒ that
I will ⇒ he would
Tomorrow ⇒ the following day

**176.** (2) Said to ⇒ asked
No connective for wh-question.
Interrogative ⇒ Assertive
Present Tense ⇒ Past Tense

**177.** (1) Said to ⇒ told
Connective ⇒ that
I am ⇒ he was

**178.** (1) Said to ⇒ told us
It is an imperative sentence.
connective ⇒ to (+$V_1$)

**179.** (2) Connective ⇒ that
My train will ⇒ His train would (Past)

**180.** (2) Said to ⇒ told
Connective ⇒ that
These ⇒ those
Present Simple ⇒ Past Simple.

**181.** (1) Subject + has/have + to be + $V_3$ + by + Object.

**182.** (1) Subject + shall/will + be + $V_3$.

**183.** (1) Subject + was/were + $V_3$ + to + object + by + Object + ....

**184.** (3) Subject + was/were + $V_3$ + to + object + by + Object.

**185.** (3) For how long + will + Subject + be + $V_3$ + Past Participle + by + Object.

**186.** (1) Subject + has/have + been + $V_3$ + to + object + by + Object.

**187.** (1) Subject + is/am/are + always + $V_3$ + ....

**188.** (2) Subject + was/were + $V_3$ + by + Object.

**189.** (4) I am sure + subject + will be + $V_3$ + by + Object.

**190.** (2) Subject + is/am/are + Adverb + $V_3$ + by + Object.

**191.** (2) Subject + am/is/are + $V_3$ + by + Object.

**192.** (4) Subject + was/were + $V_3$ + by + Object + Adverb.

**193.** (1) Subject + shall/will + be + $V_3$ + by + Object.

**194.** (2) Subject + need to be + $V_3$ + by + Object.

**195.** (1) Subject + is/am/are + being + $V_3$ + by + Object.

**196.** (3) Subject + is/am/are + $V_3$ + by + Object + ....

**197.** (2) Subject + was/were + Adverb + $V_3$ + .....

**198.** (4) Subject + has/have + $V_3$ + by + Object + ....

**199.** (4) Subject + has/have + been + $V_3$ + by whom.

**OR**

By whom + has/have + Subject + been + $V_3$.

**200.** (1) Subject + shall/will + be + $V_3$ + to + Object + by + Object.

□□□

SET 46

# SOLVED PAPER

# SSC CGL TIER-II (CBE) EXAM

Held on : 20.02.2018

## QUANTITATIVE ABILITIES

**1.** Which of the following statement(s) is/are **TRUE**?

I. $33^3 > 3^{33}$

II. $333 > (3^3)^3$

(1) Only I
(2) Only II
(3) Both I and II
(4) Neither I nor II

**2.** If P = $2^2 + 6^2 + 10^2 + 14^2 + \ldots\ldots 94^2$ and Q = $1^2 + 5^2 + 9^2 + \ldots\ldots 81^2$, then what is the value of P – Q ?

(1) 24645 (2) 26075
(3) 29317 (4) 31515

**3.** If A = $\left(\frac{1}{0.4}\right) + \left(\frac{1}{0.04}\right) + \left(\frac{1}{0.004}\right)$ +...... upto 8 terms, then what is the value of A?

(1) 27272727.5
(2) 25252525.5
(3) 27777777.5
(4) 25555555.5

**4.** If M = $0.1 + (0.1)^2 + (0.01)^2$ and N = $0.3 + (0.03)^2 + (0.003)^2$, then what is the value of M + N?

(1) 0.411009
(2) 0.413131
(3) 0.313131
(4) 0.131313

**5.** If P = $\frac{96}{95 \times 97}$, Q = $\frac{97}{96 \times 98}$ and R = $\frac{1}{97}$, then which of the following is **TRUE**?

(1) P < Q < R
(2) R < Q < P
(3) Q < P < R
(4) R < P < Q

**6.** Which of the following statements (s) is/are **TRUE**?

I. $11\frac{1}{2} + 17\frac{3}{4} - 5\frac{1}{5} - 2\frac{1}{10} = \frac{439}{20}$

II. $\frac{9}{1078} > \frac{11}{1127} > \frac{12}{1219}$

III. $\frac{149}{151} > \frac{153}{155} > \frac{157}{159}$

(1) Only I
(2) Only II
(3) Only III
(4) None is true.

**7.** Which of the following statements(s) is/are **TRUE**?

I. $\frac{2}{3\sqrt{5}} < \frac{3}{2\sqrt{5}} < \frac{5}{4\sqrt{3}}$

II. $\frac{3}{2\sqrt{5}} < \frac{2}{3\sqrt{3}} < \frac{7}{4\sqrt{5}}$

(1) Only I
(2) Only II
(3) Both I and II
(4) Neither I nor II

**8.** Which of the following statement(s) is/are **TRUE**?

I. The total number of positive factors of 72 is 12.

II. The sum of first 20 odd numbers is 400.

III. Largest two digit prime number is 97.

(1) Only I and II
(2) Only II and III
(3) Only I and III
(4) All are true .

**9.** If M = $\left(\frac{3}{7}\right) \div \left(\frac{6}{5}\right) \times \left(\frac{2}{3}\right) + \left(\frac{1}{5}\right) \times \left(\frac{3}{2}\right)$ and N = $\left(\frac{2}{5}\right) \times \left(\frac{5}{6}\right) \div \left(\frac{1}{3}\right) + \left(\frac{3}{5}\right) \times \left(\frac{2}{3}\right) \div \left(\frac{3}{5}\right)$, then what is the value of $\frac{M}{N}$?

(1) $\frac{207}{560}$ (2) $\frac{339}{1120}$
(3) $\frac{113}{350}$ (4) $\frac{69}{175}$

**10.** M is the largest 4 digit number, which when divided by 4, 5, 6 and 7 leaves remainder as 2, 3, 4, and 5 respectively. What will be the remainder when M is divided by 9?

(1) 2 (2) 1
(3) 3 (4) 6

**11.** Which of the following statement(s) is/are **TRUE**?

I. $\sqrt{11} + \sqrt{7} < \sqrt{10} + \sqrt{8}$

II. $\sqrt{17} + \sqrt{11} > \sqrt{15} + \sqrt{13}$

(1) Only I
(2) Only II
(3) Both I and II
(4) Neither I nor II

**12.** Which of the following statement(s) is/are **TRUE** ?

I. $\sqrt{12} > \sqrt[3]{16} > \sqrt[4]{24}$

II. $\sqrt[3]{25} > \sqrt[4]{32} > \sqrt[6]{48}$

III. $\sqrt[4]{9} > \sqrt[3]{15} > \sqrt[6]{24}$

(1) Only I and II
(2) Only I and III
(3) Only I
(4) All are true.

**13.** If $x + y + z = 22$ and $xy + yz + zx = 35$, then what is the value of $(x-y)^2 + (y-z)^2 + (z-x)^2$?

(1) 793 (2) 681
(3) 758 (4) 715

**14.** If $\frac{(x+y)}{z} = 2$, then what is the value of $\left[\frac{y}{(y-z)}\right] + \left[\frac{x}{(x-z)}\right]$?

(1) 0 (2) 1
(3) 2 (4) – 1

**15.** If $\alpha$ and $\beta$ are the roots of equation $x^2 - 2x + 4 = 0$, then what is the equation whose roots are $\frac{\alpha^3}{\beta^2}$ and $\frac{\beta^3}{\alpha^2}$ ?
(1) $x^2 - 4x + 8 = 0$
(2) $x^2 - 32x + 4 = 0$
(3) $x^2 - 2x + 4 = 0$
(4) $x^2 - 16x + 4 = 0$

**16.** If one root of the equation $Ax^2 + Bx + C = 0$ is two and a half times the others, then which of the following is **TRUE**?
(1) $7B^2 = 3\ CA$
(2) $7B^2 = 4\ CA$
(3) $7B^2 = 36\ CA$
(4) $10B^2 = 49\ CA$

**17.** If $x^2 - 12x + 33 = 0$, then what is the value of $(x-4)^2 + \left[\frac{1}{(x-4)^2}\right]$?
(1) 16 (2) 14
(3) 18 (4) 20

**18.** If $a^4 + 1 = \left[\frac{a^2}{b^2}\right](4b^2 - b^4 - 1)$, then what is the value of $a^4 + b^4$?
(1) 2 (2) 16
(3) 32 (4) 64

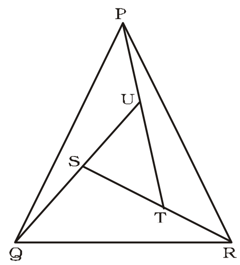
**19.** If $3\sqrt{\frac{1-a}{a}} + 9 = 19 - 3\sqrt{\frac{a}{1-a}}$, then what is the value of $a$ ?
(1) $\frac{3}{10}, \frac{7}{10}$ (2) $\frac{1}{10}, \frac{9}{10}$
(3) $\frac{2}{5}, \frac{3}{5}$ (4) $\frac{1}{5}, \frac{4}{5}$

**20.** If $a + b = 10$ and $\sqrt{\frac{a}{b}} - 13 = -\sqrt{\frac{b}{a}} - 11$, then what is the value of $3ab + 4a^2 + 5b^2$?
(1) 450 (2) 300
(3) 600 (4) 750

**21.** If $3x + 4y - 2z + 9 = 17$, $7x + 2y + 11z + 8 = 23$ and $5x + 9y + 6z - 4 = 18$, then what is the value of $x + y + z - 34$?
(1) – 28 (2) – 14
(3) – 31 (4) – 45

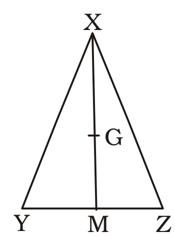
**22.** If $x + 3y - \frac{2z}{4} = 6$, $x + \frac{2}{3}(2y + 3z) = 33$ and $\frac{1}{7}(x + y + z) + 2z = 9$, then what is the value of $46x + 131y$?
(1) 414 (2) 364
(3) 384 (4) 464

**23.** In the given figure, in triangle STU, ST = 8 cm, TU = 9 cm and SU = 12 cm, QU = 24 cm, SR = 32 cm and PT = 27 cm. What is the ratio of the area of triangle PQU and area of triangle PTR ?



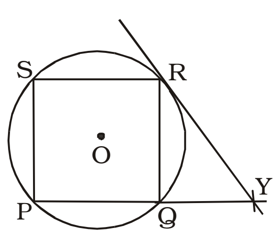

(1) 1 : 1 (2) 1 : 4
(3) 2 : 3 (4) 5 : 2

**24.** In triangle XYZ, G is the centroid. If XY = 11 cm, YZ = 14 cm. and XZ = 7 cm, then what is the value (in cm.) of GM?




(1) 6 (2) 4
(3) 2 (4) 3

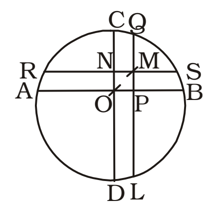
**25.** In the given figure, PQRS is a square inscribed in a circle of radius 4 cm. PQ is produced till point Y. From Y a tangent is drawn to the circle at point R. What is the length (in cm.) of SY?




(1) $4\sqrt{10}$ (2) $2\sqrt{10}$
(3) $6\sqrt{10}$ (4) $3\sqrt{5}$

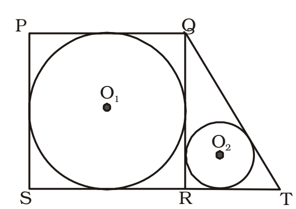
**26.** In a trapezium, one diagonal divides the other in the ratio 2 : 9. If the length of the larger of the two parallel sides is 45 cm, then what is the length (in cm.) of the other parallel side?
(1) 10 (2) 5
(3) 18 (4) 14

**27.** In the given figure, CD and AB are diameters of circle and AB and CD are perpendicular to each other. LQ and SR are perpendiculars to AB and CD respectively. Radius of circle is 5 cm, PB : PA = 2 : 3 and CN : ND = 2 : 3. What is the length (in cm.) of SM?



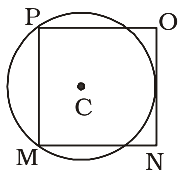

(1) $\left[\left(5\sqrt{3}\right) - 3\right]$
(2) $\left[\left(4\sqrt{3}\right) - 2\right]$
(3) $\left[\left(2\sqrt{5}\right) - 1\right]$
(4) $\left[\left(2\sqrt{6}\right) - 1\right]$

**28.** In the given figure, PQRS is a square of side 20 cm and SR is extended to point T. If the length of QT is 25 cm, then what is the distance (in cm.) between the centres $O_1$ and $O_2$ of the two circles?



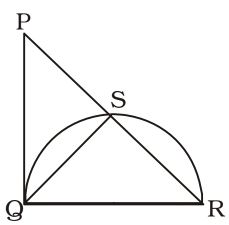

(1) $5\sqrt{10}$ (2) $4\sqrt{10}$
(3) $8\sqrt{5}$ (4) $16\sqrt{2}$

**29.** In the given figure, MNOP is a square of side 6 cm. What is the value (in cm.) of radius of circle?



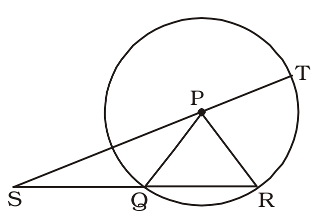

(1) 4.25 (2) 3.75
(3) 3.5 (4) 4.55

**30.** In the given figure, triangle PQR is a right angled triangle at Q. If PQ = 35 cm and QS = 28 cm, then what is the value (in cm.) of SR?




(1) 35.33 (2) 37.33
(3) 41.33 (4) 43.33

**31.** In the given figure, P is the centre of the circle. If QS = PR, then what is the ratio of ∠RSP to the ∠TPR?

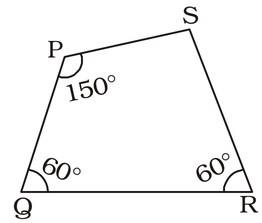



(1) 1 : 4 (2) 2 : 5
(3) 1 : 3 (4) 2 : 7

**32.** The distance between the centres of two circles is 61 cm and their radii are 35 cm and 24 cm. What is the length (in cm.) of the direct common tangent to the circles?

(1) 60 (2) 54
(3) 48 (4) 72

**33.** In the given figure, PQRS is a quadrilateral. If QR = 18 cm and PS = 9 cm, then what is the area (in cm$^2$.) of quadrilateral PQRS?



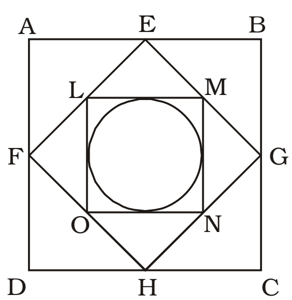

(1) $\frac{(64\sqrt{3})}{3}$ (2) $\frac{(177\sqrt{3})}{2}$

(3) $\frac{(135\sqrt{3})}{2}$ (4) $\frac{(98\sqrt{3})}{3}$

**34.** PQR is a triangle, whose area is 180 cm$^2$. S is a point on side QR, such that PS is the angle bisector of ∠QPR. If PQ : PR = 2 : 3, then what is the area (in cm$^2$.) triangle PSR?

(1) 90 (2) 108
(3) 144 (4) 72

**35.** In the given figure. ABCD is a square. EFGH is a square formed by joining mid points of sides of ABCD. LMNO is a square formed by joining mid points of sides of EFGH. A circle is inscribed inside EFGH. If area of circle is 38.5 cm$^2$., then what is the area (in cm$^2$.) of square ABCD?




(1) 98 (2) 196
(3) 122.5 (4) 171.5

**36.** ABCDEF is a regular hexagon of side 12 cm. What is the area (in cm$^2$.) of the triangle ECD?

(1) $18\sqrt{3}$ (2) $24\sqrt{3}$

(3) $36\sqrt{3}$ (4) $42\sqrt{3}$

**37.** PQRS is a square whose side is 16 cm. What is the value of the side (in cm.) of the largest regular octagon that can be cut from the given square?

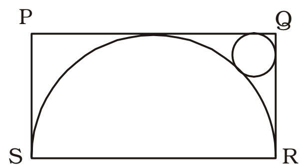
(1) $8 - 4\sqrt{2}$

(2) $16 + 8\sqrt{2}$

(3) $16\sqrt{2} - \sqrt{16}$

(4) $16 - 8\sqrt{2}$

**38.** In the given figure, PQRS is a rectangle and a semicircle with SR as diameter is drawn. A circle is drawn as shown in the figure. If QR = 7 cm, then what is the radius (in cm.) of the small circle?



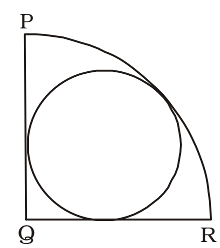

(1) $21 + 14\sqrt{2}$

(2) $21 - 14\sqrt{2}$

(3) Both $21 + 14\sqrt{2}$ and $21 - 14\sqrt{2}$

(4) None of these

**39.** In the given figure, PQR is a quadrant whose radius is 7 cm. A circle is inscribed in the quadrant as shown in the figure. What is the area (in cm$^2$.) of the circle?




(1) $385 - 221\sqrt{2}$

(2) $308 - 154\sqrt{2}$

(3) $154 - 77\sqrt{2}$

(4) $462 - 308\sqrt{2}$

**40.** A prism has a regular hexagonal base with side 6 cm. If the total surface area of prism is $216\sqrt{3}$ cm$^2$, then what is the height (in cm.) of prism ?

(1) $3\sqrt{3}$ (2) $6\sqrt{3}$
(3) 6 (4) 3

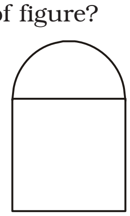
**41.** The radius of base of solid cone is 9 cm and its height is 21 cm. It cut into 3 parts by two cuts, which are parallel to its base. The cuts are at height of 7 cm. and 14 cm. from the base respectively. What is the ratio of curved surface areas of top, middle and bottom parts respectively?
(1) 1 : 4 : 8 (2) 1 : 3 : 5
(3) 1 : 3 : 9 (4) 1 : 6 : 12

**42.** A right circular cylinder has height as 18 cm and radius as 7 cm. The cylinder is cut in three equal parts (by 2 cuts parallel to base). What is the percentage increase in total surface area?
(1) 62 (2) 56
(3) 48 (4) 52

**43.** The ratio of curved surface area and volume of a cylinder is 1 : 7. The ratio of total surface area and volume is 187 : 770. What is the respective ratio of its base radius and height?
(1) 5 : 8 (2) 4 : 9
(3) 3 : 7 (4) 7 : 10

**44.** The ratio of total surface area and volume of a sphere is 1 : 7. This sphere is melted to form small spheres of equal size. The radius of each small sphere is $\frac{1}{6}$ th the radius of the large sphere. What is the sum (in cm$^2$.) of curved surface areas of all small spheres?
(1) 31276 (2) 36194
(3) 25182 (4) 33264

**45.** A Hemisphere is kept on top of a cube. Its front view is shown in the given figure. The total height of the figure is 21 cm. The ratio of curved surface area of hemisphere and total surface area of cube is 11 : 42. What is the total volume (in cm$^3$.) of figure?



(1) 3318.33 (2) 3462.67
(3) 3154.67 (4) 3248.33

**46.** A solid cube has side 8 cm. It is cut along diagonals of top face to get 4 equal parts. What is the total surface area (in cm$^2$.) of each part?
(1) $96 + 64\sqrt{2}$
(2) $80 + 64\sqrt{2}$
(3) $96 + 48\sqrt{2}$
(4) $80 + 48\sqrt{2}$

**47.** A regular pyramid has a square base. The height of the pyramid is 22 cm. and side of its base is 14 cm. Volume of pyramid is equal to the volume of a sphere. What is the radius (in cm.) of the sphere?
(1) $\sqrt[3]{49}$ (2) 7
(3) 14 (4) $\sqrt[3]{98}$

**48.** What is the value of

$$\frac{[\sin(y - z) + \sin(y + z) + 2\sin y]}{[\sin(x - z) + \sin(x + z) + 2\sin x]} = ?$$

(1) $\cos x \sin y$
(2) $\frac{(\sin y)}{(\sin x)}$
(3) $\sin z$
(4) $\sin x \tan y$

**49.** What is the value of

$$\left\{\frac{[\sin(x+y) - 2\sin x + \sin(x-y)]}{[\cos(x-y) + \cos(x+y) - 2\cos x]}\right\} \times \left[\frac{(\sin 10x - \sin 8x)}{(\cos 10x + \cos 8x)}\right] = ?$$

(1) 0 (2) $\tan^2 x$
(3) 1 (4) $2\tan x$

**50.** What is the value of

$$\frac{[\sin(90°-10\theta) - \cos(\pi - 6\theta)]}{\left[\cos\left(\frac{\pi}{2} - 10\theta\right) - \sin(\pi - 6\theta)\right]} = ?$$

(1) $\tan 2\theta$ (2) $\cot 2\theta$
(3) $\cot\theta$ (4) $\cot 3\theta$

**51.** If $\sec\theta(\cos\theta + \sin\theta) = \sqrt{2}$, then what is the value of $\frac{(2\sin\theta)}{(\cos\theta - \sin\theta)}$ ?
(1) $3\sqrt{2}$ (2) $\frac{3}{\sqrt{2}}$
(3) $\frac{1}{\sqrt{2}}$ (4) $\sqrt{2}$

**52.** What is the value of

$$\frac{1}{\sin^4(90-\theta)} + \frac{1}{[\cos^2(90-\theta)] - 1} ?$$

(1) $\tan^2\theta \sec^2\theta$
(2) $\sec^4\theta$
(3) $\tan^4\theta$
(4) $\tan^2\theta \sin^2\theta$

**53.** What is the value of

$$\frac{[\tan(90 - A) + \cot(90 - A)]^2}{[2\sec^2(90 - 2A)]} ?$$

(1) 0 (2) 1
(3) 2 (4) –1

**54.** What is the value of $\{\sin(90 - x)\cos[\pi - (x - y)]\} + \{\cos(90 - x)\sin[\pi - (y - x)]\}$ ?
(1) $-\cos y$ (2) $-\sin y$
(3) $\cos x$ (4) $\tan y$

**55.** The angle of elevation of an aeroplane from a point on the ground is 60°. After flying for 30 seconds, the angle of elevation changes to 30°. If the aeroplane is flying at a height of 4500 metre, then what is the speed (in m/s) of aeroplane?
(1) $50\sqrt{3}$ (2) $100\sqrt{3}$
(3) $200\sqrt{3}$ (4) $300\sqrt{3}$

**56** A kite is flying in the sky. The length of string between a point on the ground and kite is 420 metre. The angle of elevation of string with the ground is 30°. Assuming that there is no slack in the string, then what is the height (in metres) of the kite ?
(1) 210 (2) $140\sqrt{3}$
(3) $210\sqrt{3}$ (4) 150

**57.** A balloon leaves from a point P rises at a uniform speed. After 6 minutes, an observer situated at a distance of $450\sqrt{3}$ metres from point P observes that angle of elevation of the balloon is 60°. Assume that point of observation and point P are on the same level. What is the speed (in m/s) of the balloon?
(1) 4.25 (2) 3.75
(3) 4.5 (4) 3.45

**Directions (58–62) :** The table given below shows the information about bats manufactured by 6 different companies. Each company manufactures only plastic and wooden bats. Each company labels these bats as Brand A or Brand B. The table shows the number of plastic bats as a percentage of total bats manufactured by each company. It also show the ratio of wooden bats labeled A and B. Each company manufactured a total of 550000 bats.

| Company | Plastic bats | Brand A : B |
|---|---|---|
| R | 55% | 21 : 4 |
| S | 70% | 8 : 7 |
| T | 45% | 6 : 19 |
| U | 75% | 41 : 14 |
| V | 60% | 7 : 15 |
| W | 40% | 5 : 6 |

**58.** What is the total number of wooden bats of brand A manufactured by company T ?
(1) 23420 (2) 22990
(3) 68920 (4) 72600

**59.** N = Wooden bats of Brand B manufactured by U.
M = Total wooden bats manufactured by R and W together.
What is the value of N/M ?
(1) 0.043 (2) 0.061
(3) 0.125 (4) 0.087

**60.** P = Sum of wooden bats of Brand B manufactured by S and wooden bats of Brand A manufactured by W. Q = Difference of Brand B wooden bats and Brand A wooden bats manufactured by U.
What is the value P – Q ?
(1) 67500 (2) 177700
(3) 159500 (4) 123500

**61.** Taking all 6 companies together, how many wooden bats of Brand A have been produced?
(1) 691000 (2) 724000
(3) 683000 (4) 716000

**62.** X = Average of plastic bats manufactured by V, U and T.
Y = Wooden bats of Brand A manufactured by V.
What is the value X – Y ?
(1) 197600 (2) 432890
(3) 260000 (4) 293300

**63.** A drum contains 80 litres of ethanol. 20 litres of this liquid is removed and replaced with water. 20 litres of this mixture is again removed and replaced with water. How much water (in litres) is present in this drum now ?
(1) 45 (2) 40
(3) 35 (4) 44

**64.** An alloy is made by mixing metal A costing Rs. 2000/kg. and metal B costing Rs. 400/kg in the ratio A : B = 3 :1. What is the cost (in Rs.) of 8 kilograms of this alloy ?
(1) 1600 (2) 9800
(3) 6400 (4) 12800

**65.** A, B and C invest to start a restaurant. The total investment was Rs. 3 lakhs. B invested Rs. 50,000 more than A and C invested Rs. 25,000 less than B. If the profit at the end of the year was Rs. 14,400 then what is C's share of the profit (in Rs.) ?
(1) 3600 (2) 4800
(3) 6000 (4) 7200

**66.** Two businessmen A and B invest in a business in the ratio 5 : 8. They decided to reinvest 30% of the profit they earned back into the business. The remaining profit they distributed amongst themselves. If A's share of the profit was Rs. 87,500 then how much profit (in Rs.) did the business make?
(1) 227000 (2) 250000
(3) 375000 (4) 325000

**67.** Working alone A can do the task in 27 hours and B can do it in 54 hours. Find C's share (in Rs.) if A, B and C get paid Rs. 4,320 for completing a task in 12 hours on which they worked together.
(1) 1440 (2) 960
(3) 1920 (4) 1280

**68.** If A had worked alone he would have taken 63 hours to do the task. What is B's share, if A and B work together on a task finishing it in 36 hours and they get paid Rs. 5,950 for it?
(1) 3400 (2) 3600
(3) 2550 (4) 2750

**69.** Working together A, B and C can complete a task in 12 days. A and B can do the task in 55 days and 66 days respectively if they worked alone. In how many days can C do the task if he worked alone?
(1) 22 (2) 44
(3) 20 (4) 40

**70.** B would have taken 10 hours more than what A would have taken to complete a task if each of them worked alone. Working together they can complete the task in 12 hours. How many hours would B take to do 50% of the task?
(1) 30 (2) 15
(3) 20 (4) 10

**71.** Giving two successive discounts of 20% is same as giving one discount of ________ %.
(1) 36 (2) 40
(3) 44 (4) 50

**72.** A retailer marks up his goods by 150% and offers 40% discount. What will be the selling price (in Rs.) if the cost price is Rs. 800 ?
(1) 1200 (2) 1500
(3) 1000 (4) 2000

**73.** On a television of brand A the discount is 25% and on television of brand B the discount is 40%. The price of B after discount Rs. 2,250 greater than the price of A after discount. What is the marked price of A (in Rs.) if marked price of B is Rs. 35,000 ?

(1) 18750 (2) 21000
(3) 25000 (4) 17850

**74.** If 60% discount is offered on the marked price and selling price becomes equal to cost price then what was the % mark up?
(1) 100 (2) 250
(3) 150 (4) 40

**75.** If 3A = 6B = 9C; What is A : B : C ?
(1) 6 : 3 : 1 (2) 6 : 3 : 2
(3) 9 : 3 : 6 (4) 9 : 3 : 1

**76.** How many job applicants had applied if the ratio of selected to unselected was 19 : 17. If 1,200 less had applied and 800 less selected, then the ratio of selected to unselected would have been 1 : 1.
(1) 6000 (2) 7200
(3) 8400 (4) 4800

**77.** What is the third proportional to 10 and 20 ?
(1) 30 (2) 25
(3) 50 (4) 40

**78.** The ratio of the sum of the salaries of A and B to the difference of their salaries is 11 : 1 and the ratio of the sum of the salaries of B and C to the difference of their salaries is also 11 : 1. If A's salary is the highest and C's is the lowest then what is B's salary (in Rs.) given the total of all their salaries is Rs.1,82,000 ?
(1) 72000 (2) 60000
(3) 50000 (4) 86400

**79.** If by increasing the price of a ticket in the ratio 8 : 11 the number of tickets sold fall in the ratio 23 : 21 then what is the increase (in Rs.) in revenue if revenue before increase in price of ticket was Rs. 36,800?
(1) 21250 (2) 9400
(3) 7850 (4) 12850

**80.** The ratio of ages of the father and mother was 11 : 10 when their son was born. The ratio of ages of the father and mother will be 19 : 18 when the son will be twice his present age. What is the ratio of present ages of father and mother ?
(1) 15 : 14 (2) 14 : 13
(3) 16 : 15 (4) 17 : 16

**81.** Of the 3 numbers whose average is 22, the first is $\frac{3}{8}$th the sum of other 2. What is the first number ?
(1) 16 (2) 20
(3) 22 (4) 18

**82.** The average of three consecutive odd numbers is 52 more than $\frac{1}{3}$rd of the largest of these numbers. What is the smallest of these numbers ?
(1) 79 (2) 75
(3) 81 (4) 77

**83.** A batsman scores 98 runs in the 17th match of his career. His average runs per match increased by 2.5. What is his average before the 17th match ?
(1) 58 (2) 60.5
(3) 63 (4) 55.5

**84.** What is the average of all numbers between 100 and 200 which are divisible by 13 ?
(1) 147.5 (2) 145.5
(3) 143.5 (4) 149.5

**85.** A vendor buys bananas at 9 for Rs. 8 and sells at 8 for Rs. 9. What will be the profit or loss (in %) ?
(1) 13.28% profit
(2) 26.56% loss
(3) 26.56% profit
(4) 13.28% loss

**86.** If a stall sells a pizza at Rs. 200 he makes 20% loss if he wants to make 10% profit then at what price (in Rs.) should he sell ?
(1) 250 (2) 300
(3) 275 (4) 325

**87.** A wholesaler had 200 dozens of mangoes. He sold some of these mangoes at 20% profit and the rest at 10% profit, so that he made 13% profit on selling all the mangoes. How many mangoes (in dozens) did he sell at 20% profit?
(1) 140 (2) 60
(3) 80 (4) 120

**88.** If the selling price is tripled and cost price doubled the profit would become 65%. What is the present profit (in %) ?
(1) 20 (2) 15
(3) 25 (4) 10

**89.** 0.06% of 250% of 1600 is
(1) 24 (2) 0.24
(3) 0.024 (4) 2.4

**90.** Two numbers are 90% and 75% lesser than a third number. By what % should the first number be increased so that it becomes equal to the second number ?
(1) 250 (2) 200
(3) 150 (4) 100

**91.** When a number is increased by 216, it becomes 140% of itself. What is the number ?
(1) 540 (2) 756
(3) 450 (4) 675

**92.** A man donates 30% of his wealth to charity. 30% and 25% of the remaining wealth to his wife and son respectively. The rest he divides equally between his three daughters. One of his daughter gets Rs. 42 lakh as her share. What was the man's wealth (in Rs. lakhs)?
(1) 280 (2) 400
(3) 500 (4) 350

**93.** A bus travels 720 km. in 20 hours. Calculate its average speed in metres/second.
(1) 12 (2) 15
(3) 18 (4) 10

**94.** If a boat goes upstream at a speed of 21 km./h. and comes back the same distance at 28 km./h. What is the average speed (in km./hr.) for the total journey ?
(1) 24.5 (2) 24
(3) 25 (4) 25.4

**95.** Two runners A and B start running at 12 km./hr. and 16 km./hr. towards each other. They meet after 1 hour and 30 minutes. How far (in km.) were they from each other when they started?
(1) 42 (2) 36
(3) 40 (4) 45

**96.** Flight A usually takes 1 hour more than Flight B to travel a distance of 7200 km. Due to engine trouble speed of flight B falls by a factor of $\frac{1}{6}$ th, so it takes 36 minutes more than Flight A to complete the same journey? What is the speed of Flight A (in km./hr.) ?

(1) 800 (2) 900
(3) 750 (4) 720

**97.** In how many years will Rs. 2,000 yield Rs. 662 as compound interest at 10% per annum compounded annually ?

(1) 3 (2) 2
(3) 4 (4) 5

**98.** What is the compound interest earned on Rs. 80,000 at 40% per annum in 1 year compounded quarterly ?

(1) 28317 (2) 37128
(3) 18732 (4) 21387

**99.** An investor invested his saving in the stock market. The value of his investments increased by 12% and 9% in the first year and the second year respectively. If the value of his investments after two years became Rs. 97,664 then how much had he invested (in Rs.)?

(1) 81000 (2) 75000
(3) 80000 (4) 72000

**100.** What is the rate of interest (in %) if simple interest earned on a certain sum for the 3 years is Rs. 6,000 and compound interest earned for 2 years is Rs. 4,160 ?

(1) 9 (2) 8
(3) 12 (4) 6



## ANSWERS

| **1.** (4) | **2.** (2) | **3.** (3) | **4.** (1) |
|---|---|---|---|
| **5.** (2) | **6.** (1) | **7.** (1) | **8.** (4) |
| **9.** (3) | **10.** (2) | **11.** (1) | **12.** (1) |
| **13.** (3) | **14.** (3) | **15.** (3) | **16.** (4) |
| **17.** (2) | **18.** (1) | **19.** (2) | **20.** (2) |
| **21.** (3) | **22.** (1) | **23.** (*) | **24.** (3) |
| **25.** (1) | **26.** (1) | **27.** (4) | **28.** (1) |
| **29.** (2) | **30.** (2) | **31.** (3) | **32.** (1) |
| **33.** (3) | **34.** (2) | **35.** (2) | **36.** (3) |
| **37.** (4) | **38.** (2) | **39.** (4) | **40.** (1) |
| **41.** (2) | **42.** (2) | **43.** (4) | **44.** (4) |
| **45.** (2) | **46.** (1) | **47.** (2) | **48.** (2) |
| **49.** (2) | **50.** (2) | **51.** (4) | **52.** (1) |
| **53.** (3) | **54.** (1) | **55.** (2) | **56.** (1) |
| **57.** (2) | **58.** (4) | **59.** (2) | **60.** (3) |
| **61.** (1) | **62.** (3) | **63.** (3) | **64.** (4) |
| **65.** (2) | **66.** (4) | **67.** (1) | **68.** (3) |
| **69.** (3) | **70.** (2) | **71.** (1) | **72.** (1) |
| **73.** (3) | **74.** (3) | **75.** (2) | **76.** (2) |
| **77.** (4) | **78.** (2) | **79.** (2) | **80.** (1) |
| **81.** (4) | **82.** (4) | **83.** (4) | **84.** (4) |
| **85.** (3) | **86.** (3) | **87.** (2) | **88.** (4) |
| **89.** (4) | **90.** (3) | **91.** (1) | **92.** (2) |
| **93.** (4) | **94.** (2) | **95.** (1) | **96.** (1) |
| **97.** (1) | **98.** (2) | **99.** (3) | **100.** (2) |

## EXPLANATIONS

**1.** (4) I. $3^{33} = (3^{11})^3$

$\because 3^{11} > 33$

$\therefore 33^3 < 3^{33}$

II. $(3^3)^3 = (27)^3 = 729 \times 27$

Clearly, $333 < (729 \times 27)$

**2.** (2) $P = 2^2 + 6^2 + 10^2 + 14^2 + ..... + 94^2$

$= 4\,[1 + 3^2 + 5^2 + 7^2 + .... + (47)^2]$

$\therefore 1^2 + 3^2 + 5^2 + ......+ (2n - 1)^2$

$= \frac{n(2n+1)(2n-1)}{3}$

Number of terms in P = $n$

$\therefore a_n = a + (n - 1)d$

$\Rightarrow 47 = 1 + (n - 1)\,2$

$\Rightarrow 46 = (n - 1) \times 2$

$\Rightarrow n - 1 = \frac{46}{2} = 23$

$\Rightarrow n = 23 + 1 = 24$

$\therefore P = \frac{4 \times 24\ (48+1)(48-1)}{3}$

$= 4 \times 8 \times 49 \times 47 = 73696$

$Q = 1^2 + 5^2 + 9^2 + ..... + (81)^2$

Number of terms = $n$

$\therefore a_n = a + (n - 1)d$

$\Rightarrow 81 = 1 + (n - 1) \times 4$

$\Rightarrow (n - 1) = \frac{80}{4} = 20 \Rightarrow n = 21$

$n$th term $= (1 + (n - 1) \times 4)^2$

$= (4n - 3)^2 = 16n^2 - 24n + 9$

$\therefore \text{Sum} = \frac{16n(n+1)(2n+1)}{6} - \frac{24(n+1) \times n}{2} + 9n$

$= \frac{16 \times 21 \times 22 \times 43}{6} - 12 \times 21 \times 22 + 9 \times 21$

$= 52976 - 5544 + 189 = 47621$

$\therefore P - Q = 73696 - 47621$

$= 26075$

**3.** (3) $A = \frac{1}{0.4} + \frac{1}{0.04} + \frac{1}{0.004} +$ ..... 8 terms

$= \frac{1}{\frac{4}{10}} + \frac{1}{\frac{4}{100}} + \frac{1}{\frac{4}{1000}} +$ .... 8 terms

$= \frac{10}{4} + \frac{100}{4} + \frac{1000}{4} +$....8 terms

$= \frac{1}{4}(10 + 100 + 1000 +$....8 terms)

$= \frac{111111110}{4} = 27777777.5$

**4.** (1) $M = 0.1 + (0.1)^2 + (0.01)^2$

$= 0.1 + 0.01 + 0.0001 = 0.1101$

$N = 0.3 + 0.0009 + 0.000009$

$= 0.300909$

$\therefore M + N = 0.1101 + 0.300909$

$= 0.411009$

**5.** (2) $R = \frac{1}{97}$

$Q = \frac{97}{96 \times 98} > \frac{97}{97 \times 97} > \frac{1}{97}$

$P = \frac{96}{95 \times 97} = \frac{1}{97}\left(\frac{95+1}{95}\right)$

$= \frac{1}{97}\left(1 + \frac{1}{95}\right) > Q$

$\therefore R < Q < P$

**6.** (1) I. Expression

$= 11 + 17 - 5 - 2 + \frac{1}{2} + \frac{3}{4} - \frac{1}{5} - \frac{1}{10}$

$= 21 + \frac{10+15-4-2}{20}$

$= 21 + \frac{19}{20} = \frac{420+19}{20} = \frac{439}{20}$

II. $\frac{9}{1078} < \frac{9}{1000} \approx 0.009$

$\frac{11}{1127} < \frac{11}{1100} \approx 0.01$

Clearly,

$\frac{9}{1078} < \frac{11}{1127} < \frac{12}{1219}$

III. $\frac{3}{5} = 0.6$ ; $\frac{7}{9} = 0.77$

$\frac{11}{13} = 0.846$

Clearly,

$\frac{3}{5} < \frac{7}{9} < \frac{11}{13}$

$\therefore \frac{149}{151} < \frac{153}{155} < \frac{157}{159}$

**7.** (1) I. $\frac{2}{3\sqrt{5}} = \frac{2 \times \sqrt{5}}{3 \times \sqrt{5} \times \sqrt{5}}$

$= \frac{2\sqrt{5}}{15} = \frac{8\sqrt{5}}{60}$

$\frac{3}{2\sqrt{5}} = \frac{3\sqrt{5}}{2\sqrt{5} \times \sqrt{5}} = \frac{3\sqrt{5}}{10} = \frac{18\sqrt{5}}{60}$

$\Rightarrow \frac{5}{4\sqrt{3}} = \frac{5\sqrt{3}}{4\sqrt{3} \times \sqrt{3}} = \frac{5\sqrt{3}}{12}$

$= \frac{25\sqrt{3}}{60}$

Clearly,

$\frac{2}{3\sqrt{5}} < \frac{3}{2\sqrt{5}} < \frac{5}{4\sqrt{3}}$

II. $\frac{3}{2\sqrt{5}} = \frac{3\sqrt{5}}{2\sqrt{5} \times \sqrt{5}} = \frac{3\sqrt{5}}{10}$

$= \frac{3 \times 2.24}{10} = 0.672$

$\frac{2}{3\sqrt{3}} = \frac{2\sqrt{3}}{9} = \frac{2 \times 1.7}{9} = 0.377$

$\frac{7}{4\sqrt{3}} = \frac{7\sqrt{5}}{20} = \frac{7 \times 2.24}{20}$

= 0.784

Clearly,

0.377< 0.672 < 0.784

$\therefore \quad \frac{2}{3\sqrt{3}} < \frac{3}{2\sqrt{5}} < \frac{7}{4\sqrt{5}}$

**OR**

$\frac{2}{3\sqrt{5}}, \frac{3}{2\sqrt{5}}, \frac{5}{4\sqrt{3}}$

(Multiply by LCM of $3\sqrt{5}$, $2\sqrt{5}$, $4\sqrt{3}$ i.e. $\Rightarrow 24\sqrt{15}$)

$\frac{2}{3\sqrt{5}} \times 24\sqrt{15}, \frac{3}{2\sqrt{5}} \times 24\sqrt{15}, \frac{5}{4\sqrt{3}} \times 24\sqrt{15}$

$16\sqrt{3}, 36\sqrt{3}, 30\sqrt{5}$

$\boxed{16\sqrt{3} < 36\sqrt{3} < 30\sqrt{5}}$

$\therefore \frac{2}{3\sqrt{5}} < \frac{3}{2\sqrt{5}} < \frac{5}{4\sqrt{3}}$

II. $\frac{3}{3\sqrt{5}}, \frac{2}{3\sqrt{3}}, \frac{7}{4\sqrt{3}}$

(LCM of $2\sqrt{5}$, $3\sqrt{3}$, $4\sqrt{3} \Rightarrow 12\sqrt{15}$)

$\frac{3}{2\sqrt{5}} \times 12\sqrt{15}, \frac{2}{3\sqrt{3}} \times 12\sqrt{15}, \frac{7}{4\sqrt{3}} \times 12\sqrt{15}$

$18\sqrt{3}, 8\sqrt{5}, 21\sqrt{5}$

$8\sqrt{5} < 18\sqrt{3} < 21\sqrt{5}$

$\Rightarrow \frac{2}{3\sqrt{3}} < \frac{3}{2\sqrt{5}} < \frac{7}{4\sqrt{3}}$

**8.** (4) I.

| 2 | 72 |
|---|---|
| 2 | 36 |
| 2 | 18 |
| 3 | 9 |
| | 3 |

$\therefore$ $72 = 2^3 \times 3^2$

$\therefore$ Number of factors = (3 + 1) (2+1) = 12

II. Sum of first $n$ odd numbers $= n^2$

$\therefore$ Sum of first 20 odd numbers = $20^2$ = 400

**Look :**

$1 + 3 = 4 = 2^2$;

$1 + 3 + 5 = 9 = 3^2$;

$1 + 3 + 5 + 7 = 16 = 4^2$.

III. 97 is the largest 2-digit prime number.

**9.** (3) $M = \frac{3}{7} \times \frac{5}{6} \times \frac{2}{3} + \frac{1}{5} \times \frac{3}{2}$

$= \frac{5}{21} + \frac{3}{10} = \frac{50+63}{210} = \frac{113}{210}$

$N = \frac{2}{5} \times \frac{5}{6} \times 3 + \frac{3}{5} \times \frac{2}{3} \times \frac{5}{3}$

$= 1 + \frac{2}{3} = \frac{5}{3}$

$\therefore \frac{M}{N} = \frac{113}{210} \div \frac{5}{3}$

$= \frac{113}{210} \times \frac{3}{5} = \frac{113}{350}$

**10.** (2) Here, divisor – respective remainder = 2

Largest 4-digit number = 9999

LCM of 4, 5, 6 and 7 = 420

| 2 | 4, 5, 6, 7 |
|---|---|
| | 2, 5, 3, 7 |

$\therefore$ LCM = 2 × 2 × 5 × 3 × 7 = 420

```
420) 9999 (23
     840
     1599
     1260
      339
```

$\therefore$ Divisible Number = 9999 – 339 = 9660

Required number = 9660 – 2 = 9658

On dividing 9658 by 9, remainder = 1

**Illustration :**

$$9\overline{)9658}(1073$$
9
65
63
28
27
1

**11.** (1) I. $\left(\sqrt{11}+\sqrt{7}\right)^2$

$= 11 + 7 + 2\sqrt{11\times 7}$

$= 18 + 2\sqrt{77}$

$\left(\sqrt{10}+\sqrt{8}\right)^2$

$= 10 + 8 + 2\sqrt{10\times 8}$

$= 18 + 2\sqrt{80}$

Clearly;

$\sqrt{11}+\sqrt{7}<\sqrt{10}+\sqrt{8}$

as $\sqrt{80}>\sqrt{77}$

II. $\left(\sqrt{17}+\sqrt{11}\right)^2$

$= 17 + 11 + 2\sqrt{17\times 11}$

$= 28 + 2\sqrt{187}$

$\left(\sqrt{15}+\sqrt{13}\right)^2$

$= 15 + 13 + 2\sqrt{15\times 13}$

$= 28 + 2\sqrt{195}$

$\therefore\ \sqrt{17}+\sqrt{11}<\sqrt{15}+\sqrt{13}$

as $\sqrt{195}>\sqrt{187}$

**12.** (1) I. LCM of the order 2, 3 and 4 = 12

$\therefore\ \sqrt{12} = \sqrt[12]{12^6}$

$= \sqrt[12]{144\times144\times144}$

$= \sqrt[12]{20736\times144}$

$\sqrt[3]{16} = \sqrt[12]{16^4} = \sqrt[12]{256\times256}$

$= \sqrt[12]{512\times128}$

$\sqrt[4]{24} = \sqrt[12]{(24)^3} = \sqrt[12]{576\times24}$

$\therefore\ \sqrt{12}>\sqrt[3]{16}>\sqrt[4]{24}$

II. LCM of orders 3, 4 and 6 = 12

$\therefore\ \sqrt[3]{25} = \sqrt[12]{(25)^4} = \sqrt[12]{(5)^8}$

$\sqrt[4]{32} = \sqrt[12]{(32)^3} = \sqrt[12]{(2)^{15}} = \sqrt[12]{(4)^{7.5}}$

$\sqrt[6]{48} = \sqrt[12]{(48)^2} = \sqrt[12]{2^8\times3^2}$

Clearly,

$\sqrt[3]{25}>\sqrt[4]{32}>\sqrt[6]{48}$

III. LCM of orders 4, 3 and 6 = 12

$\therefore\ \sqrt[4]{9} = \sqrt[12]{9^3} = \sqrt[12]{729}$

$\sqrt[3]{15} = \sqrt[12]{15^4} = \sqrt[12]{50625}$

$\sqrt[6]{24} = \sqrt[12]{24^2} = \sqrt[12]{576}$

Clearly;

$\sqrt[6]{24}<\sqrt[4]{9}<\sqrt[3]{15}$

**13.** (3) $x + y + z = 22;$
$xy + yz + zx = 35$
$\therefore\ (x + y + z)^2$
$= x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$
$\Rightarrow\ (22)^2 = x^2 + y^2 + z^2 + 2 \times 35$
$\Rightarrow\ 484 = x^2 + y^2 + z^2 + 70$
$\Rightarrow\ x^2 + y^2 + z^2 = 484 - 70 = 414$
$\therefore\ (x - y)^2 + (y - z)^2 + (z - x)^2$
$= 2\,(x^2 + y^2 + z^2 - xy - yz - zx)$
$= 2\,(414 - 35) = 2 \times 379 = 758$

**14.** (3) $\dfrac{x+y}{z} = 2$

$\Rightarrow\ x + y = 2z \Rightarrow y = 2z - x$

$\therefore\ \dfrac{y}{y-z}+\dfrac{x}{x-z}$

$= \dfrac{2z-x}{2z-x-z}+\dfrac{x}{x-z}$

$= \dfrac{2z-x}{z-x}+\dfrac{x}{z-x}$

$= \dfrac{2z-x-x}{z-x} = \dfrac{2z-2x}{z-x}$

$= \dfrac{2(z-x)}{z-x} = 2$

**15.** (3) $x^2 - 2x + 4 = 0$

$\Rightarrow\ x = \dfrac{-(-2)\pm\sqrt{(-2)^2-4\times4}}{2}$

$\left[ax^2+bx+c=0 \Rightarrow x = \dfrac{-b\pm\sqrt{b^2-4ac}}{2a}\right]$

$= \dfrac{2\pm\sqrt{4-16}}{2}$

$= \dfrac{2\pm\sqrt{-12}}{2} = \dfrac{2\pm2\sqrt{3}i}{2}$

$= 1 \pm \sqrt{3}i$

$\therefore\ 1 + \sqrt{3}i = -2\omega$

$1 - \sqrt{3}i = -2\omega^2$

$\therefore\ \dfrac{\alpha^3}{\beta^2}+\dfrac{\beta^3}{\alpha^2} = \dfrac{\alpha^5+\beta^5}{\alpha^2\beta^2}$

$= \dfrac{(-2)^5\left(\omega^5+\omega^{10}\right)}{(-2)^4\omega^2\times\omega^4}$

$= \dfrac{-2\left(\omega^2+\omega\right)}{\omega^6}$

$[\because\ \omega^3 = 1;\ 1 + \omega + \omega^2 = 0]$

$= 2$

Again, $\dfrac{\alpha^3}{\beta^2}\times\dfrac{\beta^3}{\alpha^2} = \alpha\beta = 4$

$\therefore$ Required equation is :
$x^2$ – (sum of the roots) $x$ + product of roots = 0
$\Rightarrow\ x^2 - 2x + 4 = 0$

**16.** (4) $Ax^2 + Bx + C = 0$
One root = $a$

$\therefore$ Second root = $\dfrac{5\alpha}{2} = \beta$ .

$\therefore\ \alpha + \beta = \dfrac{-B}{A}$

$\Rightarrow\ \alpha + \dfrac{5\alpha}{2} = \dfrac{-B}{A}$

$\Rightarrow\ \dfrac{7\alpha}{2} = \dfrac{-B}{A}$

$\Rightarrow\ \alpha = \dfrac{-2B}{7A}$ ...(i)

Again, $\alpha\beta = \dfrac{C}{A}$

$\Rightarrow\ \alpha \times \dfrac{5\alpha}{2} = \dfrac{C}{A}$

$\Rightarrow\ \alpha^2 = \dfrac{2C}{5A}$ ...(ii)

$\therefore \left(\frac{-2B}{7A}\right)^2 = \frac{2C}{5A}$

$\Rightarrow \frac{4B^2}{49A^2} = \frac{2C}{5A}$

$\Rightarrow \frac{2B^2}{49A} = \frac{C}{5}$

$\Rightarrow 10B^2 = 49\ CA$

**17.** (2) $x^2 - 12x + 33 = 0$

$\Rightarrow x^2 - 8x + 16 - 4x + 16 + 1 = 0$

$\Rightarrow (x-4)^2 - 4(x-4) + 1 = 0$

$\Rightarrow (x-4)^2 + 1 = 4(x-4)$

$\Rightarrow (x-4) + \frac{1}{(x-4)} = 4$

On squaring both sides,

$\left\{(x-4) + \frac{1}{(x-4)}\right\}^2 = 16$

$\Rightarrow (x-4)^2 + \frac{1}{(x-4)^2} + 2 = 16$

$\Rightarrow (x-4)^2 + \frac{1}{(x-4)^2} = 16 - 2$

$= 14$

**18.** (1) $a^4 + 1 = \frac{a^2}{b^2}(4b^2 - b^4 - 1)$

$\Rightarrow a^4b^2 + b^2 = 4a^2b^2 - a^2b^4 - a^2$

$\Rightarrow a^4b^2 + b^2 - 4a^2b^2 + a^2b^4 + a^2 = 0$

$\Rightarrow a^4b^2 + b^2 - 2a^2b^2 - 2a^2b^4 + a^2b^4 + a^2 = 0$

$\Rightarrow b^2(a^4 + 1 - 2a^2) + (a^2b^4 + a^2 - 2b^2a^2) = 0$

$\Rightarrow b^2(a^2-1)^2 + a^2(b^4 + 1 - 2b^2) = 0$

$\Rightarrow b^2(a^2-1)^2 + a^2(b^2-1)^2 = 0$

[If $x^2 + y^2 = 0 \Rightarrow x = 0$ and $y = 0$]

$\therefore b^2(a^2-1)^2 = 0$

$\Rightarrow a^2 - 1 = 0 \Rightarrow a^2 = 1$

and $a^2(b^2-1)^2 = 0$

$\Rightarrow b^2 - 1 = 0 \Rightarrow b^2 = 1$

$\therefore a^4 + b^4 = (1)^2 + (1)^2$

$= 1 + 1 = 2$

**19.** (2) Let, $\sqrt{\frac{1-a}{a}} = x$

$\therefore \sqrt{\frac{a}{1-a}} = \frac{1}{x}$

$\therefore 3x + 9 = 19 - \frac{3}{x}$

$\Rightarrow 3x + 9 = \frac{19x - 3}{x}$

$\Rightarrow 3x^2 + 9x = 19x - 3$

$\Rightarrow 3x^2 + 9x - 19x + 3 = 0$

$\Rightarrow 3x^2 - 10x + 3 = 0$

$\Rightarrow 3x^2 - 9x - x + 3 = 0$

$\Rightarrow 3x(x-3) - 1(x-3) = 0$

$\Rightarrow (x-3)(3x-1) = 0$

$\Rightarrow x = 3$ or $\frac{1}{3}$

When $x = 3$

$\sqrt{\frac{1-a}{a}} = 3 \Rightarrow \frac{1-a}{a} = 9$

$\Rightarrow \frac{1}{a} - 1 = 9$

$\Rightarrow \frac{1}{a} = 9 + 1 = 10$

$\Rightarrow a = \frac{1}{10}$

Again, when $a = \frac{1}{3}$

$\Rightarrow \sqrt{\frac{1-a}{a}} = \frac{1}{3}$

$\Rightarrow \frac{1-a}{a} = \frac{1}{9}$

$\Rightarrow \frac{1}{a} - 1 = \frac{1}{9}$

$\Rightarrow \frac{1}{a} = \frac{1}{9} + 1$

$= \frac{10}{9}$

$\Rightarrow a = \frac{9}{10}$

**20.** (2) Let, $\sqrt{\frac{a}{b}} = x$

$\therefore \sqrt{\frac{b}{a}} = \frac{1}{x}$

$\therefore x - 13 = -\frac{1}{x} - 11$

$\Rightarrow x + \frac{1}{x} = 13 - 11$

$\Rightarrow x + \frac{1}{x} = 2$

$\Rightarrow x^2 - 2x + 1 = 0$

$\Rightarrow (x-1)^2 = 0 \Rightarrow x = 1$

$\therefore \frac{a}{b} = 1 \Rightarrow a = b$

$\therefore a + b = 10$

$\Rightarrow a = 5$ and $b = 5$

$\therefore 3ab + 4a^2 + 5b^2$

$= 3 \times 5 \times 5 + 4 \times (5)^2 + 5 \times (5)^5$

$= 75 + 100 + 125 = 300$

**21.** (3)

$$\begin{array}{rl} 3x + 4y - 2z + 9 = 17 & \dots(i) \\ 7x + 2y + 11z + 8 = 23 & \dots(ii) \\ 5x + 9y + 6z - 4 = 18 & \dots(iii) \\ \hline + \quad 15x + 15y + 15z + 13 = 58 & \end{array}$$

$\Rightarrow 15x + 15y + 15z$

$= 58 - 13 = 45$

$\Rightarrow x + y + z = 3$

$\Rightarrow x + y + z - 34 = -34 + 3$

$\Rightarrow x + y + z - 34 = -31$

**22.** (1) $x + 3y - \frac{2z}{4} = 6$

$\Rightarrow 4x + 12y - 2z = 24 \quad \dots(i)$

$x + \frac{2}{3}(2y + 3z) = 33$

$\Rightarrow 3x + 4y + 6z = 99 \quad \dots(ii)$

$\frac{1}{7}(x + y + z) + 2z = 9$

$\Rightarrow x + y + 15z = 63 \quad \dots(iii)$

By equation (i) × 3 + (ii),

$$\begin{array}{r} 12x + 36y - 6z = 72 \\ 3x + 4y + 6z = 99 \\ \hline 15x + 40y = 171 \dots (iv) \end{array}$$

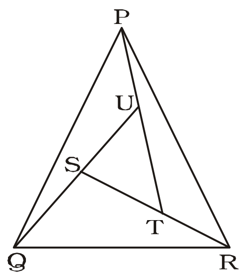
Again, equation (i) × $\frac{15}{2}$ + (iii),

$$30x + 90y - 15z = 180$$
$$x + y + 15z = 63$$
$$31x + 91y = 243 \quad ...(v)$$

By equation (iv) and (v),

$$15x + 40y = 171$$
$$31x + 91y = 232$$
$$46x + 131y = 414$$

**23.** (*)




SU = 12 cm., ST = 8 cm.
TU = 9 cm.
$8^2 + 9^2 = 64 + 81 = 145 \approx 12^2$
In ΔSUT,

$$\sin SUT = \frac{8}{12} = \frac{3}{4}$$

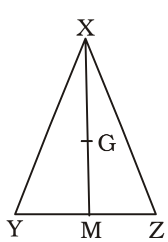
= sin PUQ
sin UTS = 1 = sinPTR
PU = (27 –9) = 18 cm.
TR = 32 – 8 = 24 cm.

$$\therefore \frac{\text{Area of } \Delta PQU}{\text{Area of } \Delta PTR}$$

$$= \frac{\frac{1}{2} PU \times QU \sin PUQ}{\frac{1}{2} PT \times TR \sin PTR}$$

$$= \frac{\frac{1}{2} \times 18 \times 24 \times \frac{3}{4}}{\frac{1}{2} \times 27 \times 24} = 1 : 2$$

**24.** (1)




YZ = $x$; XY = $z$; XZ = $y$

$$\therefore XM = \frac{1}{2}\sqrt{2(z^2 + y^2) - x^2}$$

$$= \frac{1}{2}\sqrt{2[(11)^2 + (7)^2 - (14)^2]}$$

$$= \frac{1}{2}\sqrt{2(121 + 49) - 196}$$

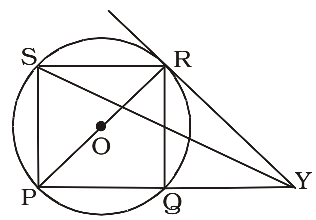
$$= \frac{1}{2}\sqrt{340 - 196}$$

$$= \frac{1}{2}\sqrt{144} = \frac{1}{2} \times 12 = 6 \text{ cm.}$$

$$\therefore GM = \frac{1}{3} \times XM = \left(\frac{1}{3} \times 6\right) \text{ cm.}$$

= 2 cm.

**25.** (1)




Let, QY = $x$ cm and YR = $y$ cm.

Diagonal of square = PR = 8 cm.

$$\therefore PQ = \frac{8}{\sqrt{2}} = 4\sqrt{2} \text{ cm.}$$

PR ⊥ RY
In ΔPRY,
$PR^2 + RY^2 = PY^2$

$$\Rightarrow (8)^2 + y^2 = \left(4\sqrt{2} + x\right)^2 \quad ...(i)$$

In ΔQRY,
$RQ^2 + QY^2 = RY^2$

$$\Rightarrow \left(4\sqrt{2}\right)^2 + x^2 = y^2 \quad ...(ii)$$

From equations (i) and (ii),

$$(8)^2 + \left(4\sqrt{2}\right)^2 + x^2 = \left(4\sqrt{2} + x\right)^2$$

$$\Rightarrow 64 + 32 + x^2 = 32 + 8\sqrt{2}\,x + x^2$$

$$\Rightarrow 8\sqrt{2}\,x = 64$$

$$\Rightarrow x = \frac{64}{8\sqrt{2}} = 4\sqrt{2} \text{ cm.}$$

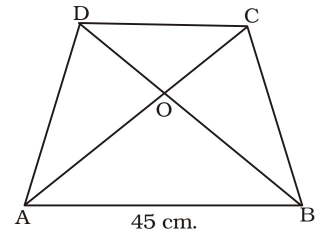
$$\therefore SY = \sqrt{PS^2 + PY^2}$$

$$= \sqrt{\left(4\sqrt{2}\right)^2 + \left(2 \times 4\sqrt{2}\right)^2}$$

$$= \sqrt{32 + 128} = \sqrt{160}$$

$$= 4\sqrt{10} \text{ cm.}$$

**26.** (1)



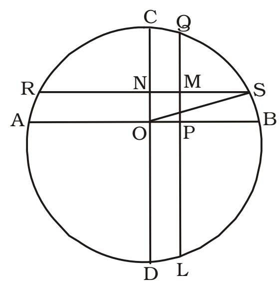

In ΔOCD and ΔOAB,
∠COD = ∠AOB
∠DCO = ∠OAB
∠ODC = ∠OBA
ΔOCD ~ OAB

$$\therefore \frac{OA}{OD} = \frac{AB}{CD}$$

$$\Rightarrow \frac{9}{2} = \frac{45}{CD}$$

$$\Rightarrow CD = \frac{2 \times 45}{9} = 10 \text{ cm.}$$

**27.** (4)




AB = CD = 10 cm.
PB : PA = 2 : 3

$$\therefore PB = \frac{2}{5} \times 10 = 4 \text{ cm.}$$

$$PA = \frac{3}{5} \times 10 = 6 \text{ cm.}$$

∴ OP = 6 – 5 = 1 cm. = MN
Again,
CN : ND = 2 : 3

$$\therefore CN = \frac{2}{5} \times 10 = 4 \text{ cm.}$$

$$ND = \frac{3}{5} \times 10 = 6 \text{ cm.}$$

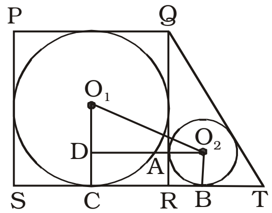
∴ ON = 1 cm.
In ΔONS,
SM = $x$ cm (let)
$SN^2 + ON^2 = OS^2$
$\Rightarrow (x + 1)^2 + 1^2 = 5^2$
$\Rightarrow (x + 1)^2 = 25 - 1 = 24$

$$= \left(2\sqrt{6}\right)^2$$

$$\Rightarrow x + 1 = 2\sqrt{6}$$

$$\Rightarrow x = \left(2\sqrt{6} - 1\right) \text{ cm.}$$

**28.** (1)




QR = SR = 20 cm.
QT = 25 cm.

$RT = \sqrt{QT^2 - QR^2}$

$= \sqrt{(25)^2 - (20)^2}$

$= \sqrt{625 - 400}$

$= \sqrt{225} = 15$ cm.

$O_2B = r$; Ex-radius $= \dfrac{QT}{2}$

$= \left(\dfrac{25}{2}\right)$ cm.

QR = $a$; RT = $b$

$\therefore\ (a - r) + (b - r) = 2R$

$\Rightarrow\ (20 - r) + (15 - r) = 25$

$\Rightarrow\ 35 - 2r = 2s$

$\Rightarrow\ 2r = 35 - 25 = 10$

$\Rightarrow\ r = \dfrac{10}{2} = 5$ cm.

$\therefore\ O_1C = 10$ cm.

$\therefore\ O_1D = 5$ cm.

In $\Delta O_1DO_2$,

$CB = O_2D = 15$ cm.

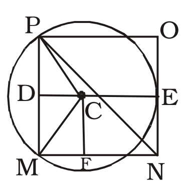
$O_1O_2 = \sqrt{O_1D^2 + DO_2^2}$

$= \sqrt{5^2 + 15^2}$

$= \sqrt{25 + 225}$

$= \sqrt{250} = 5\sqrt{10}$ cm.

**29.** (2)




CD = DE – CE

$= (6 - r)$ cm.

$CP = r$

PD = DM = 3 cm.

In $\Delta$CDP,

$CP^2 = CD^2 + PD^2$

$\Rightarrow\ r^2 = (6 - r)^2 + 3^2$

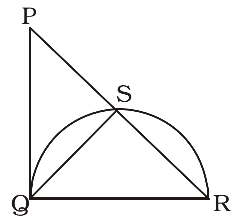
$\Rightarrow\ r^2 = 36 - 12r + r^2 + 9$

$\Rightarrow\ 45 - 12r = 0$

$\Rightarrow\ 12r = 45 \Rightarrow r = \dfrac{45}{12} = \dfrac{15}{4}$

= 3.75 cm.

**30.** (1)




$\angle QSR$ = Angle of a semi-circle $= 90°$

$\therefore\ \angle QSP = 90°$

In $\Delta PQS$,

$PS = \sqrt{PQ^2 - QS^2}$

$= \sqrt{35^2 - 28^2}$

$= \sqrt{(35+28)(35-28)}$

$= \sqrt{63 \times 7} = 3 \times 7 = 21$ cm.

$\angle PSQ = \angle QSR$

$\angle PQS = \angle R$

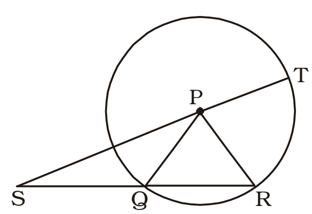
$\therefore\ \Delta PSQ \sim \Delta QSR$

$\therefore\ QS^2 = PS \times SR$

$\Rightarrow\ 28 \times 28 = 21 \times SR$

$\Rightarrow\ SR = \dfrac{28 \times 28}{21} = 37.33$

**31.** (3)




QS = PR = PQ

$\angle PSR = x = \angle QPS$

(The angles at the base of an isosceles triangle are same).

$\therefore\ \angle PQR = \angle PSQ + \angle SPQ = 2x$

$\therefore\ \angle PRQ = \angle PQR = 2x$

$\therefore\ \angle QPR = 180° - 2x - 2x$

$= 180° - 4x$

$\therefore\ \angle SPQ + \angle QPR + \angle RPT$

$= 180°$

$\Rightarrow\ x + 180° - 4x + \angle RPT = 180°$

$\therefore\ \angle RPT = 3x$

$\therefore$ Required ratio $= x : 3x$

= 1 : 3

**32.** (1) Length of Direct common tangent

$= \sqrt{(\text{Distance between centres})^2 - (r_1 - r_2)^2}$

$= \sqrt{(61)^2 - (35 - 24)^2}$

$= \sqrt{(61)^2 - (11)^2}$

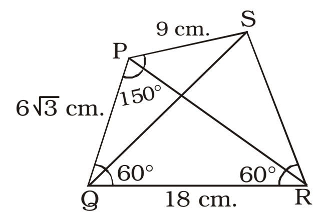
$= \sqrt{(61 + 11) - (61 - 11)}$

$= \sqrt{72 \times 50}$

$= \sqrt{36 \times 2 \times 2 \times 25}$

$= 6 \times 2 \times 5 = 60$ cm.

**33.** (3)




$\angle PSR = 360° - (150° - 60° + 60°)$

$= 360° - 270° = 90°$

QR = 18 cm., PS = 9 cm.

$\because\ 9^2 + 12^2 = 15^2$

$\therefore$ SR = 12 cm.

$\therefore$ Area of $\Delta QSR$

$= \dfrac{1}{2} \times QR \times SR \times \sin 60°$

$= \dfrac{1}{2} \times 18 \times 12 \times \dfrac{\sqrt{3}}{2}$

$= 54\sqrt{3}$ sq. cm.

If $PQ = 6\sqrt{3}$ cm.

Area of $\Delta QPS$

$= \dfrac{1}{2}\ PQ \times PS \sin 150°$

$= \dfrac{1}{2}\ 6\sqrt{3} \times 9 \times \dfrac{1}{2}$

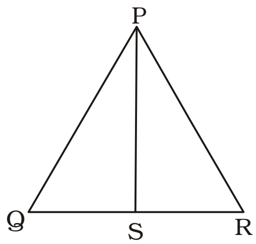
$= \dfrac{27\sqrt{3}}{2}$ sq. cm.

$\therefore$ Area of quadrilateral

$= 54\sqrt{3} + \dfrac{27\sqrt{3}}{2}$

$= \dfrac{135\sqrt{3}}{2}$ sq. cm.

**36.** (2)




PS is the bisector of $\angle QPR$

$\therefore \quad \frac{PQ}{PR} = \frac{QS}{SR} = \frac{2}{3}$

$\therefore \quad QR = 2x + 3x = 5x$ cm.

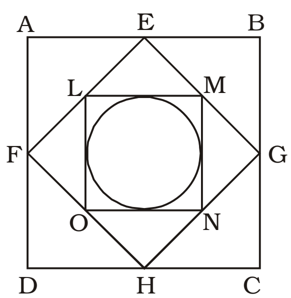
$= \frac{\text{Area of } \Delta PSR}{\text{Area of } \Delta PQR}$

$= \frac{SR \times h}{QR \times h} = \frac{SR}{QR} = \frac{3}{5}$

$\Rightarrow$ Area of $\Delta PSR = \frac{3}{5} \times 180$

= 108 sq. cm.

**35.** (2)




Area of circle = 38.5 sq. cm.

$\Rightarrow \pi r^2 = 38.5$

$\Rightarrow \frac{22}{7} \times r^2 = 38.5$

$\Rightarrow r^2 = \frac{38.5 \times 7}{22} = 12.25$

$\Rightarrow r = \sqrt{12.25} = 3.5$ cm.

$\therefore$ LM = Diameter of circle = 7 cm.

Area of square LMNO = 49 cm$^2$

The square getting after joining the midpoint of sides of a square, the area of smaller square will be half of bigger one.

So, $\square$ EFGH = 2 × $\square$ LMNO = 98 cm$^2$

$\square$ ABCD = 2 $\square$ EFGH = 2 × 98 = 196 cm$^2$

$\therefore \quad EL = \frac{LM}{\sqrt{2}} = \frac{7}{\sqrt{2}}$ cm.

($\because$ EL = EM)

$\therefore \quad EF = \frac{7}{\sqrt{2}} \times 2 = 7\sqrt{2}$ cm.

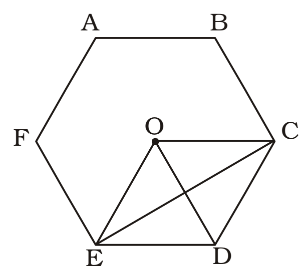
$\therefore \quad AE = \frac{EF}{\sqrt{2}}$

$= \frac{7\sqrt{2}}{\sqrt{2}} = 7$ cm.

$\therefore$ AB = 2 AE = 14 cm.

$\therefore$ Area of square ABCD = $(14)^2$ = 196 sq. cm.

**36.** (3)




Area of $\Delta OED = \frac{\sqrt{3}}{4} \times 12 \times 12$

$= 36\sqrt{3}$ sq. cm.

Area of $\square OEDC = 72\sqrt{3}$ sq. cm.

CE divides $\square$OCDE in two parts from the diagram line.

$\therefore$ Area of $\Delta ECO = \frac{1}{2} \times 72\sqrt{3}$

$= 36\sqrt{3}$

In $\Delta$OEC,

$\angle$ EOC = 120°;

OE = OC = 12 cm.

$\therefore$ Area of $\Delta$OEC

$= \frac{1}{2} \times OE \times OC \times \sin EOC$

$= \frac{1}{2} \times 12 \times 12 \times \sin 120°$

$= \frac{1}{2} \times 12 \times 12 \times \frac{\sqrt{3}}{2}$

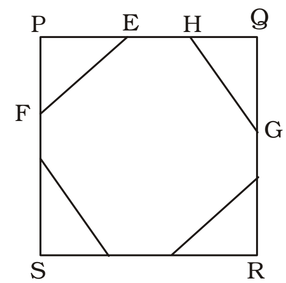
$= 36\sqrt{3}$ sq. cm.

$\therefore$ Area of $\Delta$AECD

$= \left(72\sqrt{3} - 36\sqrt{3}\right)$ sq. cm.

$= 36\sqrt{3}$ sq. cm.

**37.** (4)




PE = PF = $x$

$\therefore$ EF = $\sqrt{2}x$ cm.

EH = $\sqrt{2}x$ ; QH = $x$

$\therefore$ PE + EH + QH = 16

$\Rightarrow x + \sqrt{2}x + x = 16$

$\Rightarrow 2x + \sqrt{2}x = 16$

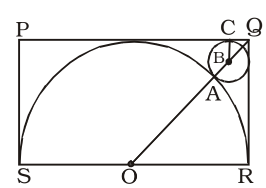
$\Rightarrow x\left(2+\sqrt{2}\right) = 16$

$x = \frac{16}{2+\sqrt{2}} = \frac{16}{2+\sqrt{2}} \times \frac{2-\sqrt{2}}{2-\sqrt{2}}$

$= \frac{16\left(2-\sqrt{2}\right)}{4-2} = 8\left(2-\sqrt{2}\right)$

$= \left(16 - 8\sqrt{2}\right)$ cm.

**38.** (2)




OA = OR = QR = 7 cm.

Radius of smaller circle = AB = $x$ cm.

BC = CQ = $x$ cm.

$\therefore \quad BQ = \sqrt{BC^2 + CQ^2}$

$= \sqrt{x^2 + x^2} = \sqrt{2x^2}$

$= \sqrt{2}x$ cm.

In $\Delta$OQR,

$OR^2 + QR^2 = OQ^2$

$\Rightarrow 7^2 + 7^2 = (OB + BQ)^2$

$2 \times 7^2 = \left(7 + x + \sqrt{2}x\right)^2$

$\Rightarrow\ 7 + x + \sqrt{2}x = 7\sqrt{2}$

(–ve value is unacceptable)

$\Rightarrow\ x + \sqrt{2}x = 7\sqrt{2} - 7$

$\Rightarrow\ x\left(\sqrt{2}+1\right) = 7\left(\sqrt{2}-1\right)$

$\Rightarrow\ x = \dfrac{7\left(\sqrt{2}-1\right)}{\left(\sqrt{2}+1\right)}$

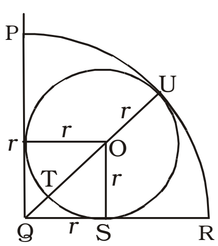
$\Rightarrow\ x = \dfrac{7\left(\sqrt{2}-1\right)}{\left(\sqrt{2}+1\right)} \times \dfrac{\left(\sqrt{2}-1\right)}{\left(\sqrt{2}-1\right)}$

$= \dfrac{7\left(\sqrt{2}-1\right)^2}{2-1}$

$= 7\left(2+1-2\sqrt{2}\right)$ cm.

$= 7\left(3-2\sqrt{2}\right) = \left(21-14\sqrt{2}\right)$ cm.

**39.** (4)




QR = 7 cm.

QT = $x$ cm; OT = OU = $r$ cm.

$\therefore\ 2r + x = 7 = QU$ ...(i)

$OQ = \sqrt{QS^2 + OS^2}$

$= \sqrt{r^2 + r^2}$

$\Rightarrow\ x + r = \sqrt{2}r$

$\therefore\ x = \left(\sqrt{2}-1\right)r$

From equation (i),

$2r + \left(\sqrt{2}-1\right)r = 7$

$\Rightarrow\ 2r + \sqrt{2}r - r = 7$

$\Rightarrow\ r\left(\sqrt{2}+1\right) = 7$

$\Rightarrow\ r = \dfrac{7}{\sqrt{2}+1}$

$= \dfrac{7}{\sqrt{2}+1} \times \dfrac{\sqrt{2}-1}{\sqrt{2}-1}$

$= 7\left(\sqrt{2}-1\right)$ cm.

$\therefore$ Area of circle $= \pi r^2$

$= \dfrac{22}{7} \times 7 \times 7\left(\sqrt{2}-1\right)^2$

$= 154\left(2+1-2\sqrt{2}\right)$

$= 154\left(3-2\sqrt{2}\right)$

$= \left(462-308\sqrt{2}\right)$ sq. cm.

OR

Area of circle $= \dfrac{\pi r^2}{3+2\sqrt{2}}$

$= \dfrac{22}{7} \times 7 \times 7 \times \dfrac{\left(3-2\sqrt{2}\right)}{\left(3+2\sqrt{2}\right)\left(3-2\sqrt{2}\right)}$

$= 154\left(3-2\sqrt{2}\right)$

$= \left(462-308\sqrt{2}\right)$ sq. cm.

**40.** (1) Perimeter of the base of prism = 6 × 6 = 36 cm.

Area of base $= 6 \times \dfrac{\sqrt{3}}{4} \times (\text{side})^2$

$= \left(6 \times \dfrac{\sqrt{3}}{4} \times 6 \times 6\right)$ sq. cm.

$= 54\sqrt{3}$ sq. cm.

Total surface area of prism

$= 216\sqrt{3}$ sq.cm.

$\Rightarrow$ Perimeter of base × height + 2 × Area of base

$= 216\sqrt{3}$

$\Rightarrow\ 36 \times h + 2 \times 54\sqrt{3}$

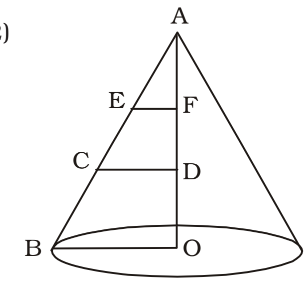
$= 216\sqrt{3}$

$\Rightarrow\ 36h = 216\sqrt{3} - 108\sqrt{3}$

$= 108\sqrt{3}$

$\Rightarrow\ h = \dfrac{108\sqrt{3}}{36} = 3\sqrt{3}$ cm.

**41.** (2)




OD = 7 cm., OF = 14 cm.,

AF = 7 cm.

$\therefore$ AD = 14 cm.

$\Delta$ ACD ~ $\Delta$ ABO

$\therefore\ \dfrac{CD}{BO} = \dfrac{AD}{AO} \Rightarrow \dfrac{CD}{9} = \dfrac{14}{21}$

$\Rightarrow\ CD = \dfrac{14}{21} \times 9 = 6$ cm.

$\Delta$ AEF ~ $\Delta$ ACD

$\therefore\ \dfrac{AF}{AD} = \dfrac{EF}{CD} \Rightarrow \dfrac{7}{14} = \dfrac{EF}{6}$

$\Rightarrow EF = \dfrac{7 \times 6}{14} = 3$ cm.

Curved surface area of lowest part i.e; frustum

$= \pi\,(R + r)\sqrt{(R-r)^2 + h^2}$

$= \pi\,(9 + 6)\sqrt{(9-6)^2 + 7^2}$

$= 15\pi \times \sqrt{9+49}$

$= 15\sqrt{58}\pi$ sq. cm.

Curved surface are of middle part i.e. frustum

$= \pi\,(6 + 3)\sqrt{(6-3)^2 + 7^2}$

$= 9\sqrt{58}\,\pi$ sq. cm.

The topmost part is a cone

Its slant height $= \sqrt{EF^2 + FA^2}$

$= \sqrt{3^2 + 7^2} = \sqrt{58}$ cm.

$\therefore$ Its curved surface area $= \pi rl$

$= \pi \times 3\sqrt{58}$ sq. cm.

$\Rightarrow\ 3\sqrt{58}\,\pi$ sq. cm.

$\therefore$ Required ratio

$= 3\sqrt{58}\,\pi : 9\sqrt{58}\,\pi : 15\sqrt{58}\pi$

$= 1 : 3 : 5$

**42.** (2) Total surface area of larger cylinder = $2\pi r (r + h)$
$= 2\pi \times 7 (7 + 18)$ sq. cm.
$= 350\pi$ sq. cm.
Total surface area of each smaller cylinder = $2\pi r (r + h_1)$
$= 2 \times \pi \times 7 (7 + 6)$ sq. cm.
$= 182\pi$ sq. cm.
$\therefore$ Total surface area of all three smaller cylinders
$= 3 \times 182\pi = 546\pi$ sq. cm.
$\therefore$ Increase $= 546\pi - 350\pi$
$= 196\pi$ sq. cm.
$\therefore$ Percentage increase

$= \frac{196\pi}{350\pi} \times 100 = 56\%$

**43.** (4) Radius of cylinder = $r$ units
Its height = $h$ units
According to the question,

$\frac{2\pi rh}{\pi r^2 h} = \frac{1}{7}$

$\Rightarrow \frac{2}{r} = \frac{1}{7} \Rightarrow r = 14$ units.

Again,

$\frac{2\pi r(r+h)}{\pi r^2 h} = \frac{187}{770}$

$\frac{2(14+h)}{14 \times h} = \frac{187}{770}$

$\Rightarrow \frac{14+h}{h} = \frac{7 \times 187}{770}$

$= \frac{187}{110} = \frac{17}{10}$

$\Rightarrow 17h = 140 + 10h$

$\Rightarrow 7h = 140 \Rightarrow h = \frac{140}{7}$

$= 20$ units

$\therefore \frac{r}{h} = \frac{14}{20} = \frac{7}{10}$

**44.** (4) Radius of sphere = $r$ cm.

$\therefore \frac{4\pi r^2}{\frac{4}{3}\pi r^3} = \frac{1}{7}$

$= \frac{3}{r} = \frac{1}{7} \Rightarrow r = 21$ cm.

Radius of each smaller sphere

$= \frac{21}{6} = \frac{7}{2}$ cm

$\therefore$ Number of small spheres

$= r_1 = \frac{1}{6} \times 21 = \frac{7}{2}$ cm.

$\therefore$ Number of each small

spheres $= \frac{\frac{4}{3}\pi r^3}{\frac{4}{3}\pi r_1^3}$

$= \left(\frac{r}{r_1}\right)^3 = \left(\frac{21}{\frac{7}{2}}\right)^3$

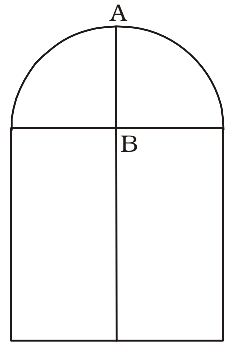
$= \left(\frac{21 \times 2}{7}\right)^3 = 216$

$\therefore$ Required curved surface area $= 216 \times 4\pi r_1^2$

$= 216 \times 4 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$

$= 33264$ sq. cm.

**45.** (2)




Radius of hemi-sphere $= \frac{\text{edge}}{2}$

$\because$ Total height = 21 cm.

$\therefore BC + \frac{BC}{2} = 21$

$\Rightarrow 3\frac{BC}{2} = 21$

$\Rightarrow BC = \frac{21 \times 2}{3} = 14$ cm.

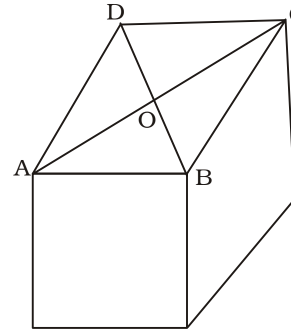
$\therefore$ Total volume of figure

$= \frac{2}{3}\pi r^3 + (BC)^3$

$= \left(\frac{2}{3} \times \frac{22}{7} \times 7 \times 7 \times 7 + 14 \times 14 \times 14\right)$ cu. cm.

$= (718.6 + 2744)$ cu. cm.
$= 3462.6$ cu. cm.

**46.** (1)




Diagonal of top face = AC = BD

$= \sqrt{AB^2 + BC^2}$

$= 2\sqrt{AB} = 8\sqrt{2}$ cm.

Clearly, AOD, DOC, AOB; BOA are bases of right prisms.
OA = OC = OB = OD

$= 4\sqrt{2}$ cm.

$\therefore$ Perimeter of each prism
= OA + OB + AB

$= 4\sqrt{2} + 4\sqrt{2} + 8$

$= \left(8\sqrt{2} + 8\right)$ cm.

Area of the base of each prism

$= \frac{b}{4}\sqrt{4a^2 - b^2}$

Where $a = 4\sqrt{2}$ cm.
$b = 8$ cm.

$= \frac{1}{4} \times 8\sqrt{4 \times \left(4\sqrt{2}\right)^2 - 8^2}$

$= 2\sqrt{128 - 64}$

$= 2\sqrt{64} = 16$ sq. cm.

$\therefore$ Total surface area of each part = Perimeter of base × height + 2 × area of base

$= \left(8\sqrt{2} + 8\right) \times 8 + 2 \times 16$

$= \left(64\sqrt{2} + 64 + 32\right)$ sq. cm.

$= \left(96 + 64\sqrt{2}\right)$ sq. cm.

**47.** (2) Volume of pyramid

$= \frac{1}{3} \times$ Area of base × height

$= \frac{1}{3} \times 14 \times 14 \times 22$

$= \frac{4312}{3}$ cu. cm.

$\therefore$ Volume of sphere

$= \frac{4312}{3}$ cu. cm.

$\Rightarrow \frac{4}{3}\pi r^3 = \frac{4312}{3}$

$\Rightarrow 4 \times \frac{22}{7} \times r^3 = 4312$

$\Rightarrow r^3 = \frac{4312 \times 7}{4 \times 22} = 343$

$\Rightarrow r = \sqrt[3]{343} = 7$ cm.

**48.** (2) $\frac{\sin(y-z)+\sin(y+z)+2\sin y}{\sin(x-z)+\sin(x+z)+2\sin x}$

$= \frac{2\sin\frac{y-z+y+z}{2}.\cos\frac{y+z-y+z}{2}+2\sin y}{2\sin\frac{x+z+x-z}{2}.\cos\frac{x+z-x+z}{2}+2\sin x}$

$\left[\sin C + \text{Sin} D = 2\sin\frac{C+D}{2}.\cos\frac{C-D}{2}\right]$

$= \frac{2\sin y.\cos z + 2\sin y}{2\sin x.\cos z + 2\sin x}$

$= \frac{2\sin y(\cos z+1)}{2\sin x(\cos z+1)} = \frac{\sin y}{\sin x}$

**49.** (2)

$\left[\frac{\sin(x+y)-2\sin x+\sin(x-y)}{\cos(x-y)+\cos(x+y)-2\cos x}\right] \times \frac{\sin 10x - \sin 8x}{\cos 10x + \cos 8x}$

$= \left[\frac{\sin(x+y)-\sin(x-y)-2\sin x}{\cos(x-y)+\cos(x+y)-2\cos x}\right] \times \frac{2\cos\frac{10x+8x}{2}.\sin\frac{10x-8x}{2}}{2\cos\frac{10x+8x}{2}.\cos\frac{10x-8x}{2}}$

$= \left[\frac{2\cos\frac{x+y+x-y}{2}.\cos\frac{x+y-x+y}{2}-2\sin x}{2\cos\frac{x+y+x-y}{2}.\cos\frac{x+y-x+y}{2}-2\cos x}\right] \times \frac{2\cos 9x.\sin x}{2\cos 9x.\cos x}$

$= \left[\frac{2\sin x.\cos y - 2\sin x}{2\cos x.\cos y - 2\cos x}\right] \times \tan x$

$= \frac{2\sin x(\cos y-1)}{2\cos x(\cos y-1)} \times \tan x$

$= \tan x . \tan x = \tan^2 x$

**50.** (2) $\frac{\sin(90°-10\theta)-\cos(\pi-6\theta)}{\cos\left(\frac{\pi}{2}-10\theta\right)-\sin(\pi-6\theta)}$

$= \frac{\cos 10\theta + \cos\theta}{\sin 10\theta - \sin 6\theta}$

$[\because \sin(\pi-\theta) = \sin; \cos(\pi-\theta) = -\cos 2\theta]$

$= \frac{2\cos\frac{10\theta+6\theta}{2}.\cos\frac{10\theta-6\theta}{2}}{2\cos\frac{10\theta+6\theta}{2}.\sin\frac{10\theta-2\theta}{2}}$

$= \frac{2\cos 8\theta}{2\cos 8\theta} \times \frac{\cos 2\theta}{\sin 2\theta} = \cot 2\theta$

**51.** (4) $\sec\theta(\cos\theta + \sin\theta) = \sqrt{2}$

$\Rightarrow \sec\theta.\cos\theta + \sec\theta.\sin\theta = \sqrt{2}$

$\Rightarrow 1 + \tan\theta = \sqrt{2}$

$\Rightarrow \tan\theta = \sqrt{2} - 1$

$\therefore \frac{2\sin\theta}{\cos\theta - \sin\theta}$

$= \frac{2.\frac{\sin\theta}{\cos\theta}}{\frac{\cos\theta-\sin\theta}{\cos\theta}} = \frac{2\tan\theta}{1-\tan\theta}$

$= \frac{2(\sqrt{2}-1)}{1-(\sqrt{2}-1)}$

$= \frac{2(\sqrt{2}-1)}{2-\sqrt{2}} \times \frac{2+\sqrt{2}}{2+\sqrt{2}}$

$= \frac{2(2\sqrt{2}-2+2-\sqrt{2})}{4-2} = \sqrt{2}$

**52.** (1) Expression

$= \frac{1}{\sin^4(90°-\theta)} + \frac{1}{\cos^2(90°-\theta)-1}$

$= \frac{1}{\cos^4\theta} + \frac{1}{\sin^2\theta - 1}$

$[\because \sin(90° - \theta) = \cos\theta;\ \cos(90° - \theta) = \sin\theta]$

$= \frac{1}{\cos^4\theta} - \frac{1}{1-\sin^2\theta}$

$= \frac{1}{\cos^4\theta} - \frac{1}{\cos^2\theta}$

$= \sec^4\theta - \sec^2\theta$

$= \sec^2\theta(\sec^2\theta - 1)$

$= \sec^2\theta.\tan^2\theta$

$[\because \sec^2\theta - \tan^2\theta = 1]$

**53.** (3) Expression

$= \frac{[\tan(90°-A)+\cot(90°-A)]^2}{2\sec^2(90°-2A)}$

$= \frac{(\cot A + \tan A)^2}{2\text{cosec}^2 2A}$

$= \frac{\left(\frac{\cos A}{\sin A}+\frac{\sin A}{\cos A}\right)^2}{2\text{cosec}^2 2A}$

$= \left(\frac{\cos^2 A + \sin^2 A}{\cos A.\sin A} \times \frac{1}{2\text{cosec}^2 2A}\right)^2$

$= \frac{1}{\cos^2 A.\sin^2 A.2\text{cosec}^2 2A}$

$= \frac{2}{(4\cos^2 A\sin^2 A)\text{cosec}^2 2A}$

$= \frac{2}{\sin^2 2A.\text{cosec}^2 2A} = 2$

$[\because 2\sin A . \cos A = \sin 2A]$

$[\because \sin A . \text{cosec} A = 1]$

**54.** (1) Expression

$= \sin(90° - x)\cos[\pi - (x - y)] + \cos(90° - x) . \sin[\pi - (y - x)]$

$\cos x(-\cos(x - y)) + \sin x . \sin(y - x)$

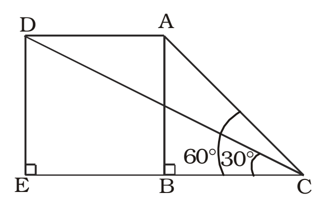
$= \cos x. \cos(y - x) + \sin x . \sin(y - x)$

$[\because \cos(-\theta) = \cos\theta]$

$= -\cos(x + y - x) = -\cos y$

$[\because \cos(A + B) = \cos A.\cos B - \sin A.\sin B]$

**55.** (2)




A and D $\Rightarrow$ positions of aeroplane

AB = DE = 4500 metre

$\angle ACB = 60°$; $\angle DCE = 30°$

In $\Delta ABC$,

$\tan 60° = \frac{AB}{BC}$

$\Rightarrow \sqrt{3} = \frac{4500}{BC}$

$\Rightarrow BC = \frac{4500}{\sqrt{3}}$

$= 1500\sqrt{3}$ metre

In $\Delta CDE$,

$\tan 30° = \frac{DE}{CE}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{4500}{CE}$

$\Rightarrow CE = 4500\sqrt{3}$ metre

$\therefore AD = \left(4500\sqrt{3} - 1500\sqrt{3}\right)$ metre

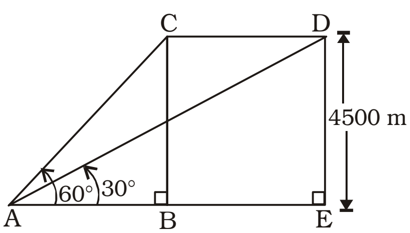
$= 3000\sqrt{3}$ metre

$\therefore$ Speed of aeroplane

$= \frac{3000\sqrt{3}}{30}$

$= 100\sqrt{3}$ metre/second

**OR**




**Aliter–1 :**

In $\Delta ADE$,

30° : 60° : 90°
1 : $\sqrt{3}$ : 2
DE : AE : AD

$\Rightarrow AE = DE\sqrt{3}$

$AE = 4500\sqrt{3}$

$\boxed{AB + BE = 4500\sqrt{3}}$

In $\Delta$ ABC,

30° : 60° : 90°
1 : $\sqrt{3}$ : 2
AB : BC : AC

$\Rightarrow BC = AB\sqrt{3}$

$\Rightarrow AB = \frac{4500}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

$AB = 1500\sqrt{3}$

$\Rightarrow BE = 4500\sqrt{3} - 1500\sqrt{3}$

$BE = 3000\sqrt{3}$

$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

$= \frac{3000\sqrt{3}}{30} = 100\sqrt{3}$ m/sec.

**Aliter–2 :**

I think formula should be

$\boxed{d = h(\cot\theta_1 - \cot\theta_2)}$ $\boxed{\theta_1 > \theta_2}$

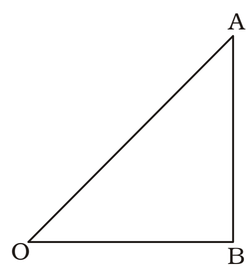
$d = h(\cot 30° - \cot 60°)$

$d = 4500\left(\sqrt{3} - \frac{1}{\sqrt{3}}\right) = 3000\sqrt{3}$

$\text{Speed} = \frac{3000\sqrt{3}}{300}$

$= 100\sqrt{3}$ m/sec

**56.** (1)




OA = Length of string

= 420 metre

$\angle AOB = 30°$

AB = Height of kite

In $\Delta OAB$,

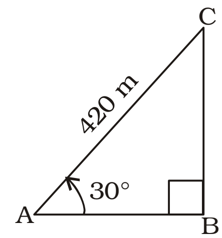
$\sin 30° = \frac{AB}{OA}$

$\Rightarrow \frac{1}{2} = \frac{AB}{420}$

$\Rightarrow AB = \frac{420}{2}$

= 210 metre

**OR**




In $\Delta ABC$,

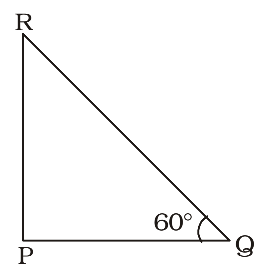
30° : 60° : 90°
1 : $\sqrt{3}$ : 2
BC : AB : AC

$AC = BC \times 2$

$\Rightarrow BC = \frac{420}{2}$

BC = 210 metre

**57.** (2)




$\angle PQR = 60°$

$PQ = 450\sqrt{3}$ metre

In $\Delta PQR$,

$\tan\theta = \frac{PR}{PQ}$

$\Rightarrow \tan 60° = \frac{PR}{450\sqrt{3}}$

$= \sqrt{3} = \frac{PR}{450\sqrt{3}}$

$\Rightarrow PR = 450\sqrt{3} \times \sqrt{3}$

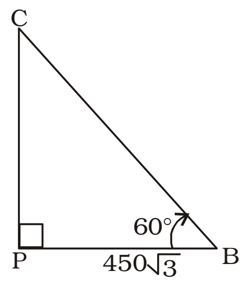
$= (450 \times 3)$ metre

$\therefore$ Speed of balloon $= \frac{PR}{6 \text{ minutes}}$

$= \left(\frac{450 \times 3}{6 \times 60}\right)$ metre/second

$= \frac{15}{4} = 3.75$ metre/second

**OR**




In $\Delta$PBC,

30° : 60° : 90°
1 : $\sqrt{3}$ : 2
PB : PC : BC

$\Rightarrow$ PC = PB $\sqrt{3}$

PC = $450\sqrt{3} \times \sqrt{3}$

PC = 1350 metre

Speed of balloon = $\frac{1350}{6 \times 60}$

= $\frac{1350}{360}$ = 3.75 m/s.

**58.** (4) Total number of wooden bats manufactured by company T = $550000 \times \frac{55}{100} = 302500$

$\therefore$ Total number of wooden bats of brand A

= $\left(\frac{6}{25} \times 302500\right)$ = 72600

**59.** (2) Number of wooden bats of brand B manufactured by company U = N

= $550000 \times \frac{25}{100} \times \frac{14}{55} = 35000$

Total number of wooden bats manufactured by companies R and W

= M = $550000\left(\frac{45+60}{100}\right)$

= $5500 \times 105$

$\therefore \frac{N}{M} = \frac{35000}{5500 \times 105} \approx 0.0606$

$\approx 0.061$

**60.** (3) Number of wooden bats of brand B manufactured by company S

= $550000 \times \frac{30}{100} \times \frac{7}{15} = 77000$

Number of wooden bats of brand A manufactured by company W = $550000 \times \frac{60}{100} \times \frac{5}{11}$

= 150000

$\therefore$ P = 77000 + 150000
= 227000

Difference of brand B and brand A wooden bats manufactured by company U

= $550000 \times \frac{25}{100} \times \frac{41-14}{55}$

= $100 \times 25 \times 27 = 67500$

$\therefore$ P – Q = 227000 – 67500
= 159500

**61.** (1) Number of wooden bats of brand A manufactured by company R $\Rightarrow 550000 \times \frac{45}{100} \times \frac{21}{25}$

= 207900

Company S

$\Rightarrow 550000 \times \frac{30}{100} \times \frac{8}{15}$

= 88000

Company T

$\Rightarrow 550000 \times \frac{55}{100} \times \frac{6}{25} = 72600$

Company U

$\Rightarrow 550000 \times \frac{25}{100} \times \frac{41}{55}$

= 102500

Company V

$\Rightarrow 550000 \times \frac{40}{100} \times \frac{7}{22}$

= 70000

Company W

$\Rightarrow 550000 \times \frac{60}{100} \times \frac{5}{11}$

= 150000

$\therefore$ Required answer = 207900 + 88000 + 72600 + 102500 + 70000 + 150000 = 691000

**62.** (3) X = Number of plastic bats manufactured by companies V, U and T

= $550000\left(\frac{60}{100} + \frac{75}{100} + \frac{45}{100}\right)$

= $550000 \times \frac{180}{100} = 990000$

$\therefore$ Average = 330000

Y = Wooden bats of brand A manufactured by

= $550000 \times \frac{40}{100} \times \frac{7}{22} = 70000$

$\therefore$ X – Y = 330000 – 70000
= 260000

**63.** (3) Remaining quantity of ethanol = Initial quantity

$\left(1 - \frac{\text{quantity taken out}}{\text{Initial quantity}}\right)$

= $80\left(1 - \frac{20}{80}\right)^2$

= $80 \times \left(1 - \frac{1}{4}\right)^2$

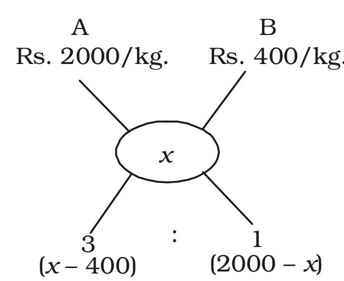
= $80 \times \frac{3}{4} \times \frac{3}{4}$ = 45 litres

$\therefore$ Quantity of water
= (80 – 45) litres = 35 litres

**64.** (4) A : B = 3 : 1 = 6 : 2

$\therefore$ Cost of 8 kg. of alloy
= Rs. $(6 \times 2000 + 2 \times 400)$
= Rs. (12000 + 800)
= Rs. 12800

**OR**




$\Rightarrow \frac{x-400}{2000-x} = \frac{3}{1}$

$\Rightarrow x - 400 = 6000 - 3x$

$4x = 6400$

$x = 1600$

Cost of 8 kg. mixture
= $1600 \times 8$ = Rs. 12800

**65.** (2) B ⇒ Rs.(A + 50000)

C ⇒ Rs.(A + 50000 – 25000)

⇒ Rs. (A + 25000)

∴ A + A + 50000 + A + 25000 = 300000

⇒ 3A = 300000 – 75000

= Rs. 225000

$\therefore \quad A = \frac{225000}{3}$ = Rs. 75000

∴ B ⇒ Rs. 125000

C = Rs. 100000

∴ A : B : C = 75000 : 125000 : 100000 = 3 : 5 : 4

Sum of the terms of ratio

= 3 + 5 + 4 = 12

$\therefore$ C's share = $\left(\frac{4}{12} \times 14400\right)$

= 4800

**66.** (4) Ratio of the profits of A and B = 5 : 8

Sum of the terms of ratio

= 5 + 8 = 13

Let the profit of the year be Rs. $x$.

$\therefore$ Profit distributed = Rs. $\frac{7x}{10}$

$\therefore$ A's share = Rs.$\left(\frac{5}{13} \times \frac{7x}{10}\right)$

= Rs.$\frac{7x}{26}$

$\therefore \quad \frac{7x}{26} = 87500$

$\Rightarrow \quad x = \frac{87500 \times 26}{7}$

= Rs. 325000

**67.** (1) (A + B + C ) 's 1 hour's work

$= \frac{1}{12}$

∴ C's 1 hour's work

$= \frac{1}{12} - \frac{1}{27} - \frac{1}{54}$

$= \frac{9-4-2}{108} = \frac{3}{108} = \frac{1}{36}$

∴ Ratio of A's, B's, and C's 1 hour's work

$= \frac{1}{27} : \frac{1}{54} : \frac{1}{36}$

$= \left(\frac{1}{27} \times 108\right) : \left(\frac{1}{54} \times 108\right) : \left(\frac{1}{36} \times 108\right)$

[LCM of 108 = 27, 54 and 36]

= 4 : 2 : 3

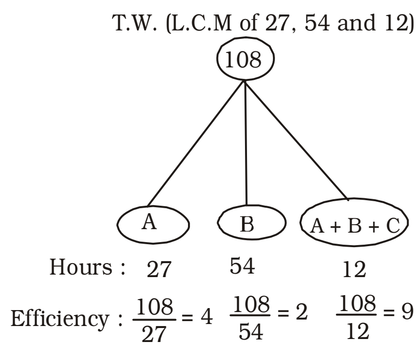
Sum of the terms of ratio

= 4 + 2 + 3 = 9

$\therefore$ C's share = Rs. $\left(\frac{3}{9} \times 4320\right)$

= Rs. 1440

**OR**




C's efficiency = 9 – (4 + 2)

= 9 – 6 = 3

C's share = $\frac{3}{9} \times 4320$

= Rs. 1440

**68.** (3) (A + B)'s 1 hour's work

$= \frac{1}{36}$

A's 1 hour's work = $\frac{1}{63}$

$\therefore$ B's 1 hour's work = $\frac{1}{36} - \frac{1}{63}$

$= \frac{7-4}{252} = \frac{3}{252} = \frac{1}{84}$

∴ Ratio of A's and B's 1 hour's work = $\frac{1}{63} : \frac{1}{84}$

$= \left(\frac{1}{63} \times 252\right) : \left(\frac{1}{84} \times 252\right)$

= 4 : 3

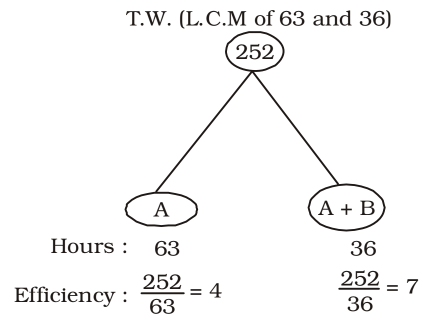
Sum of the terms of ratio

= 4 + 3 = 7

$\therefore$ B's share = Rs. $\left(\frac{3}{7} \times 5950\right)$

= Rs. 2550

**OR**




B's efficiency = (7 – 4) = 3

B' share = $\frac{3}{7} \times 5950$

= 3 × 850 = Rs. 2550

**69.** (3) (A + B + C)'s 1 day's work

$= \frac{1}{12}$

$\therefore$ A's 1 day's work = $\frac{1}{55}$

B's 1 day's work = $\frac{1}{66}$

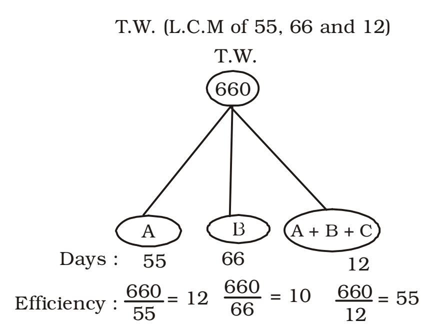
∴ C's 1 day's work

$= \frac{1}{12} - \frac{1}{55} - \frac{1}{66}$

$= \frac{55-12-10}{660} = \frac{33}{660} = \frac{1}{20}$

∴ Required time = 20 days

**OR**



C's efficiency = 55 – (10 + 12)
= 33
Time taken by C alone

$= \frac{660}{33}$ = 20 days.

**70.** (2) Time taken by A
= $x$ hours (let)
∴ Time taken by B
= $(x + 10)$ hours
According to the question,

$\Rightarrow \frac{1}{x} + \frac{1}{x+10} = \frac{1}{12}$

$\Rightarrow \frac{x+10+x}{x(x+10)} = \frac{1}{12}$

$\Rightarrow x(x + 10) = 24x + 120$
$\Rightarrow x^2 + 10x - 24x - 120 = 0$
$\Rightarrow x^2 - 14x - 120 = 0$
$\Rightarrow x^2 - 20x + 6x - 120 = 0$
$\Rightarrow x(x - 20) + 6(x + 20) = 0$
$\Rightarrow (x - 20)(x + 6) = 0$
$\Rightarrow x = 20, x \neq -6$
∴ Time taken by B in doing 1 work = 30 hours

∴ Time taken by B in doing $\frac{1}{2}$ work = 15 hours

**71.** (1) Single equivalent discount

$= \left(x + y - \frac{xy}{100}\right)\%$

$= \left(20 + 20 - \frac{20 \times 20}{100}\right)\%$

= (40 – 4) % = 36%

**72.** (1) Marked price of article

= Rs. $\left(800 \times \frac{250}{100}\right)$ = Rs. 2000

∴ When discount = 40%, its S.P.

= Rs. $\left(\frac{2000 \times 60}{100}\right)$ = Rs. 1200

**OR**

C.P. = Rs. 800

$\Rightarrow$ M.P. = 800 + $\frac{800 \times 150}{100}$

= Rs. 2000

D = 40% = $\frac{2 \rightarrow D}{5 \rightarrow M.P.}$

$\Rightarrow$ S.P. = (5 – 2) = 3
5 Units = Rs. 2000

$\Rightarrow$ 3 Units = $\frac{2000 \times 3}{5}$

= Rs. 1200

**73.** (3) Let the marked price of Brand-A television be Rs. $x$
According to the question,

$\frac{35000 \times 60}{100} - \frac{x \times 75}{100} = 2250$

$\Rightarrow 21000 - \frac{3x}{4} = 2250$

$\Rightarrow \frac{3x}{4} = 21000 - 2250$

= Rs. 18750

$\Rightarrow x$ = Rs. $\left(\frac{18750 \times 4}{3}\right)$

= Rs. 25000

**OR**

∵ D = 40%

S.P. of B = $\frac{\text{M.P.} \times (100 - \text{D})}{100}$

$= \frac{35000 \times 60}{100}$

= Rs. 21000
S.P. of A = 21000 – 2250
= 18750
∵ D = 25%

M.P. of A = $\frac{18750 \times 100}{75}$

= Rs. 25000

**74.** (3) Let the C.P. of article be Rs. 100 and its marked price be Rs. $x$.
According to the question,

$\frac{x \times 40}{100} = 100$

$\Rightarrow x = \frac{100 \times 100}{40}$ = Rs. 250

∴ Marked price = 150% above the C.P.

**75.** (2) 3A = 6B = 9C

$\Rightarrow \frac{3A}{18} = \frac{3A}{18} = \frac{9C}{18}$

[∴ LCM of 3, 6 and 9 = 18]

$\Rightarrow \frac{A}{6} = \frac{B}{3} = \frac{C}{2}$

$\Rightarrow$ A : B : C = 6 : 3 : 2

**76.** (2) Let the number of selected applicants be $19x$.
∴ Unselected applicants = $17x$
Total applicant $\Rightarrow 19x + 17x$
$= 36x$
According to the question,
$19x - 800 = 36x - 1200 - (19x - 800)$
$\Rightarrow 19x - 800 = 36x - 1200 - 19x + 800$
$\Rightarrow 19x - 800 = 17x - 400$
$\Rightarrow 19x - 17x = 800 - 400$
$\Rightarrow 2x = 400 \Rightarrow x = 200$
∴ Total applicants = $36x$
= 36 × 200 = 7200

**77.** (4) Third proportional between

$a$ and $b = \frac{b^2}{a}$

∴ Required answer

$= \frac{20 \times 20}{10} = 40$

**78.** (2) $\frac{A+B}{A-B} = \frac{11}{1}$

By componendo and dividendo,

$\frac{2A}{2B} = \frac{11+1}{11-1} = \frac{12}{10}$

$\Rightarrow \frac{A}{B} = \frac{6}{5} \Rightarrow$ A : B = 6 : 5

Again, $\frac{B+C}{B-C} = \frac{11}{1}$

By componendo and dividendo,

$\frac{2B}{2C} = \frac{11+1}{11-1} = \frac{12}{10}$

$\Rightarrow \frac{B}{C} = \frac{6}{5}$

$\Rightarrow$ B : C = 6 : 5

$\therefore$ A : B : C = (6 × 6) : (6 × 5) : (5 × 5) = 36 : 30 : 25

Sum of the term of ratio

= 36 + 30 + 25 = 91

$\therefore$ B's salary

= Rs. $\left(\frac{30}{91}\times 182000\right)$

= Rs. 60000

**79.** (2) Ratio of revenue

= (8× 23) : (11 × 21) = 184 : 231

$\therefore$ Revenue before increase

= Rs. 36800

$\therefore$ Revenue after increase

= Rs. $\left(\frac{63800}{184}\times 231\right)$

= Rs. 46200

$\therefore$ Required difference

= Rs. (46200 – 36800)

= Rs. 9400

OR

Old revenue : New revenue

= 184 : 231

Old revenue = Rs. 36800

$\therefore$ Required diffrence

= $\left(\frac{231-184}{184}\times 36800\right)$

= Rs. (47 × 200) = Rs. 9400

**OR**

Ratio of increase = 8 : 11

Fall in sale of tickets = × 23 : 21

184 : 231

Increase in Revenue

= $\frac{(231-184)}{184}\times 36800$

= $\frac{47}{184}\times 36800$

= Rs. 9400

**80.** (1) Let son's present age be $y$ years.

$\therefore$ Father's present age

= $(11x + y)$ years

Mother's present age

= $(10x + y)$ years

$y$ years hence from today,

$\frac{11x+2y}{10x+2y} = \frac{19}{18}$

$\Rightarrow$ $190x + 38y = 198x + 36y$

$\Rightarrow$ $198x - 190x = 38y - 36y$

$\Rightarrow$ $8x = 2y \Rightarrow 4x = y$ ...(i)

$\therefore$ Required ratio = $\frac{11x+y}{10x+y}$

= $\frac{11x+4x}{10x+4x} = \frac{15x}{14x}$ = 15 : 14

**81.** (4) According to the question,

$a + b + c = 22 \times 3 = 66$ ...(i)

Again,

$a = \frac{3}{8}(b + c)$

$\Rightarrow \frac{8}{3}a = b + c$ ...(ii)

From equations (i) and (ii),

$\therefore \frac{8}{3}a + a = 66$

$\Rightarrow 8a + 3a = 66 \times 3$

$\Rightarrow 11a = 66 \times 3$

$\Rightarrow a = \frac{66\times 3}{11} = 18$

**82.** (4) Three consecutive odd numbers

$\Rightarrow$ $a$, $a + 2$ and $a + 4$

According to the question,

$\frac{a+a+2+a+4}{3} = \frac{(a+4)}{3} + 52$

$\Rightarrow a + 2 = \frac{a+4+156}{3}$

$\Rightarrow 3a + 6 = a + 160$

$\Rightarrow 3a - a = 160 - 6$

$\Rightarrow 2a = 154$

$\Rightarrow a = \frac{154}{2} = 77$

**83.** (4) Let the average of the batsman after 16 matches be $x$ runs.

According to the question,

$16x + 98 = 17(x + 2.5)$

$\Rightarrow 16x + 98 = 17x + 42.5$

$17x - 16x = 98 - 42.5$

$x = 55.5$ runs.

**84.** (4) Smallest number divisible by 13 = 104

Largest number divisible by 13 = 195

$a$ = first number

$l$ = last number

$\therefore$ Required average = $\frac{a+l}{2}$

= $\frac{104+195}{2} = \frac{299}{2}$ = 149.5

**Note :** There is no need of extra calculation.

Average = $\frac{\text{First number + last number}}{2}$

**85.** (3) Let the man buy 72 bananas

[LCM of 9 and 8 = 72]

C.P. of 72 bananas = $\frac{8}{9}\times 72$

= Rs. 64

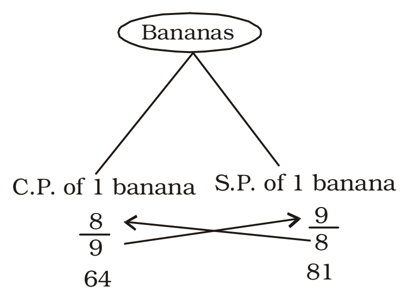
Their S.P. = $\frac{9}{8}\times 72$ = Rs. 81

Profit = Rs. (81 – 64) = Rs. 17

$\therefore$ Profit per cent = $\frac{17}{64}\times 100$

= 26.56%

**OR**




$\Rightarrow$ Profit% = $\frac{(81-64)}{64}\times 100$

= $\frac{1700}{64}$ = 26.56%

**86.** (3) C.P. of pizza = $\frac{100}{80}\times 200$

= Rs. 250

To gain 10%,

S.P of pizza = $\frac{250\times 110}{100}$

= Rs. 275

**OR**

Loss% = 20% = $\frac{1 \rightarrow L}{5 \rightarrow S.P.}$

$\Rightarrow$ C.P. = (5 – 1) = 4

S.P. = 200

$\Rightarrow$ C.P. = $200 \times \frac{5}{4} = 250$

Profit = 10% = $\frac{1}{10}$

S.P. = C.P. $\left(1+\frac{1}{10}\right)$

$= 250 \times \frac{11}{10}$ = Rs. 275

**87.** (2) Let the cost price of each dozen of mangoes be Rs. 1

Mangoes sold at 20% profit = $x$ dozens

$\therefore$ Mangoes sold at 10% profit = $(200 - x)$ dozens

According to the question,

$$x \times \frac{120}{100} + \frac{(200-x)\times 110}{100}$$

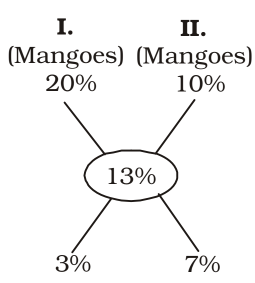
$$= \frac{200 \times 113}{100}$$

$\Rightarrow 120x + 22000 - 110x = 22600$

$\Rightarrow 10x = 22600 - 22000 = 600$

$\Rightarrow x = \frac{600}{10}$ = 60 dozens

**OR**




Required number of Mangoes

$= \frac{3}{(3+7)} \times 200$ = 60 dozen.

**88.** (4) Let the C.P. of article be Rs. 100 and its original S.P. be Rs. $x$.

Case II,

S.P. = Rs. $3x$

C.P. = Rs. 200

$\therefore \frac{3x - 200}{200} = \frac{65}{100}$

$\Rightarrow 3x - 200 = 65 \times 2$

$\Rightarrow 3x = 130 + 200 = 330$

$\Rightarrow x = \frac{330}{3}$ = Rs.110

$\therefore$ Present profit per cent = 10

**OR**

Profit % = 65%

$= \frac{13 \rightarrow P}{20 \rightarrow C.P.}$

$\Rightarrow$ S.P. = (20 + 13) = 33

Present profit

$= \frac{S.P. - C.P.}{C.P.} \times 100\%$

$= \frac{\frac{33}{3} - \frac{20}{2}}{\frac{20}{2}} \times 100\%$

$= \frac{(11-10)}{10} \times 100\% = 10\%$

**89.** (4) Expression

$= 1600 \times \frac{250}{100} \times \frac{0.06}{100} = \frac{240}{100}$

= 2.4

**90.** (3) Let, third number = 100

$\therefore$ First number = 10

Second number = 25

Difference = 25 – 10 = 15

$\therefore$ Percentage increase

$= \frac{15}{10} \times 100 = 150\%$

**91.** (1) Let the number be $x$.

According to the question,

$x + 216 = \frac{x \times 140}{100}$

$\Rightarrow x + 216 = \frac{14x}{10}$

$\Rightarrow 10x + 2160 = 14x$

$\Rightarrow 14x - 10x = 2160$

$\Rightarrow 4x = 2160$

$\Rightarrow x = \frac{2160}{4} = 540$

**OR**

**Aliter :**

Required Number = $\frac{216 \times 100}{(140-100)}$

$= \frac{21600}{40} = 540$

**92.** (2) Let the total amount with the man be Rs. 1000.

Donations to charity = Rs. 300

Remaining amount = Rs. 700

Amount given to wife

$= \frac{700 \times 30}{100}$ = Rs. 210

Amount given to son

$= \frac{700 \times 25}{100}$ = Rs. 175

Remaining amount

= Rs. (700– 210 – 175)

= Rs. 315

$\therefore$ Amount received by each daughter = $\frac{315}{3}$ = Rs. 105

When a daughter receive Rs. 105, total amount = Rs.1000

When a daughter get Rs. 42000, total amount

= Rs. $\left(\frac{100}{105} \times 4200000\right)$

= Rs. 400 lakhs

**93.** (4) Speed of bus = $\frac{\text{Distance}}{\text{Time}}$

$= \left(\frac{720}{20}\right)$ kmph. = 36 kmph.

$= \left(36 \times \frac{5}{18}\right)$ metre/second

= 10 metre/second

**94.** (2) Required average speed

$= \left(\frac{2xy}{x+y}\right)$ kmph.

$= \left(\frac{2 \times 21 \times 28}{21 + 28}\right)$ kmph.

$= \left(\frac{2 \times 21 \times 28}{49}\right)$ kmph.

= 24 kmph.

**95.** (1) Relative speed
= (12 + 16) kmph. = 28 kmph.
∴ Required initial distance
= Relative speed × Time

$= \left(28 \times \frac{3}{2}\right)$ km. = 42 km.

**96.** (1) Speed of flight A = $x$ kmph.
Speed of flight B = $y$ kmph.
Case I,

$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$

$\therefore \frac{7200}{x} - \frac{7200}{y} = 1$ ...(i)

Case II,

$\frac{7200}{\frac{5y}{6}} - \frac{7200}{x} = \frac{36}{60}$

$\Rightarrow \frac{6 \times 7200}{5y} - \frac{7200}{x} = \frac{3}{5}$

$\Rightarrow \frac{8640}{y} - \frac{7200}{x}$

$= \frac{3}{5}$ ...(ii)

On adding equations (i) and (ii),

$\Rightarrow \frac{8640}{y} - \frac{7200}{x} = 1 + \frac{3}{5}$

$\Rightarrow \frac{1440}{y} = \frac{8}{5}$

$\Rightarrow 8y = 1440 \times 5$

$\Rightarrow y = \frac{1440 \times 5}{8} = 900$ kmph.

From equation (i),

$\frac{7200}{x} - \frac{7200}{900} = 1$

$\Rightarrow \frac{7200}{x} - 8 = 1$

$\Rightarrow \frac{7200}{x} = 9$

$\Rightarrow x = \frac{7200}{9} = 800$ kmph.

**OR**

Let consider flight B
To cover 7200 km distance it takes 1 hour 36 minutes = $\frac{8}{5}$ hour more when its speed decreases by $\frac{1}{6}$ factor.

Let initial speed of flight B = $6x$

after trouble speed = $\frac{6x \times 5}{6}$

= $5x$

When same distance is covered by $S_1$, $S_2$ speeds and the time difference is *st*.

$D = \frac{S_1 S_2}{(S_1 - S_2)} \times st$

$7200 = \frac{6x \times 5x}{x} \times \frac{8}{5}$

$\boxed{x = 150 \text{ km / hr}}$

Actual speed of B = $6x$
= 150 × 6 = 900 km/hr.
Actual time taken by B

$= \frac{7200}{9} = 8$ hours

Actual time by A = 1 hour more than B = 9 hours.

Speed of A = $\frac{7200}{9}$

= 800 km/hr.

**97.** (1) Amount = Principal + Interest
= Rs. (2000 + 662) = Rs. 2662

$\therefore A = P\left(1 + \frac{R}{100}\right)^T$

$\Rightarrow 2662 = 2000\left(1 + \frac{10}{100}\right)^T$

$\Rightarrow \frac{2662}{2000} = \left(1 + \frac{1}{10}\right)^T$

$\Rightarrow \frac{1331}{1000} = \left(\frac{11}{10}\right)^3 = \left(\frac{11}{10}\right)^T$

⇒ T = 3 years

**98.** (2) Rate = 40% per annum
= 10% per quarter
Time = 1 year = 4 quarters

$\text{C.I.} = P\left[\left(1 + \frac{R}{100}\right)^T - 1\right]$

$= 80000\left[\left(1 + \frac{10}{100}\right)^T - 1\right]$

$= 80000\left[\left(\frac{11}{10}\right)^4 - 1\right]$

$= \text{Rs. } 80000\left[(1.1)^4 - 1\right]$

= Rs. 80000 (1.4641 – 1)
= (80000 × 0.4641) = 37128

**99.** (3) Let the ivestment be Rs. P.
According to the question,

$P\left(1 + \frac{12}{100}\right)\left(1 + \frac{9}{100}\right)$

= 97664

$\Rightarrow P \times \frac{112}{100} \times \frac{109}{100}$

= 97664

$\Rightarrow P = \frac{97664 \times 100 \times 100}{112 \times 109}$

= Rs. 80000

**100.** (2) S.I for two years

$= \text{Rs. } \left(\frac{6000}{3} \times 2\right)$

= Rs. 4000
C.I – S.I = Rs. (4160 – 4000)
= Rs. 160
∴ S.I for Rs. 2000 (S.I for 1 year) = Rs. 160

$\therefore \text{Rate} = \frac{160}{2000} \times 100$

= 8% per annum.

□□□

SET 47

# SOLVED PAPER
# SSC CGL TIER-II (CBE) EXAM

Held on : 20.02.2018

## ENGLISH LANGUAGE AND COMPREHENSION

**Directions (1–3) :** In the following questions, out of the given four alternatives, select the one which best expresses the meaning of the given word.

**1. Abnegation**
(1) Denial (2) Excess
(3) Yielding (4) Admittance

**2. Bereft**
(1) Full (2) Deprived
(3) Happy (4) Populous

**3. Carouse**
(1) Grieve (2) Overlook
(3) Frolic (4) Disregard

**Directions (4–6) :** In the following questions, out of the given four alternatives, select the one which is opposite in meaning of the given word.

**4. Aggrandize**
(1) Acclaim (2) Boost
(3) Parlay (4) Belittle

**5. Construe**
(1) Deduce (2) Expound
(3) Infer (4) Obscure

**6. Exigent**
(1) Urgent (2) Clamant
(3) Instant (4) Usual

**Directions (7–16) :** In the following questions, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

**7. Alarums and Excursions**
(1) Value for money and time
(2) Confused activity and uproar
(3) Source of fun or amusement
(4) Derive excitement or pleasure from

**8. Up in the air (about someone or something)**
(1) In prison
(2) Still to be settled
(3) On the wrong track
(4) Enjoying great success

**9. Give oneself airs**
(1) Be intelligent
(2) Penniless
(3) Pretend to be good
(4) Prepare for a difficulty

**10. Alphabet Soup**
(1) Incomprehensible or confusing mix
(2) Something outstandingly good
(3) Fashionable and glamorous
(4) Privileged people

**11. Be all one to**
(1) succeed in doing something
(2) Searching thoroughly
(3) Not in keeping with the rules
(4) Make no difference

**12. An article of faith**
(1) A formula for carrying a curse on someone
(2) Become very successful or famous
(3) A firmly held belief
(4) Angry or Agitated

**13. In the ascendant**
(1) A general view from above
(2) Rising in power or influence
(3) To reject someone
(4) Waiting quietly for a good opportunity

**14. Bring home the bacon**
(1) An action to be taken when all else fails
(2) Be grateful for what we have
(3) Supply material support
(4) Setback for someone or something

**15. Have the ball at your feet**
(1) Be able to recognize
(2) Miss something of what is going on around
(3) Enable someone to avoid humiliation
(4) To be in the best position to do something

**16. Banana Oil**
(1) Perfectly cool or self-possessed
(2) Nonsensical talk
(3) A plentiful supply
(4) Very long time

**Directions (17–28) :** In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

**17. Missappropriation of money**
(1) Abridgement
(2) Condiment
(3) Embezzlement
(4) Bereavement

**18. One who has the art of speaking in such a way that the sound seems to come from another person/place.**
(1) Absolutist
(2) Biblicist
(3) Ventriloquist
(4) Clavierist

**19. One who changes sides**
(1) Ascetic
(2) Turncoat
(3) Virtuoso
(4) Connoisseur

**20. One who damages public property**
(1) Cynosure
(2) Demagogue
(3) Epicure
(4) Vandal

**21. One who dies without a will**
(1) Intestate
(2) Effeminate
(3) Fugitive
(4) Heretic

**22. One who has no money**
(1) Polyglot
(2) Pauper
(3) Lunatic
(4) Recluse

**23. To free somebody from all blame**
(1) Highbrow
(2) Exonerate
(3) Escapism
(4) Henpeck

**24. One who speaks less**
(1) Bohemian
(2) Reticent
(3) Apostate
(4) Arbitrator

**25. Member of a band of robbers**
(1) Cannibal
(2) Brigand
(3) Chauvinist
(4) Coquette

**26. A shady place under trees**
(1) Debonair
(2) Bower
(3) Gourmand
(4) Fugitive

**27. Small room for worship**
(1) Bale (2) Chapel
(3) Cache (4) Brood

**28. A person without home, job or property**
(1) Narcissist (2) Derelict
(3) Iconoclast (4) Impregnable

**Directions (29–31) :** In the following questions, four words have been given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

**29.** (1) Admonition
(2) Adjoration
(3) Aestivation
(4) Adulteration

**30.** (1) Acrimonious
(2) Alacritous
(3) Ambigous
(4) Anonymous

**31.** (1) Unmanagable
(2) Impenetrable
(3) Unassailable
(4) Unfathomable

**Directions (32–36) :** In the following questions, the sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four.

**32.** A common man is not fully ______ with the complexities of the laws.
(1) accused (2) reversed
(3) abused (4) conversed

**33.** An unwritten constitution develops and expands with the development of the nation and ultimately becomes the ______ of the public opinion.
(1) symbol (2) motion
(3) role (4) badge

**34.** Aristotle held that some persons are fit to rule while others are fit to be ruled ______.
(1) over (2) of
(3) on (4) at

**35.** The role of the ______ in the society is extremely important because it formulates the policies and takes the decisions.
(1) elite (2) ordinary
(3) poor (4) common

**36.** There is no ______ the fact that traditions have a greater hold on the public than anything else.
(1) jigging (2) denying
(3) abducting (4) bemusing

**Directions (37–56) :** In the following questions, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select No Error.

**37.** He used to sits day and night (1)/ under a tree in front of a temple (2)/ that is how he earned the name. (3)/ No error (4)

**38.** There are many inner voices that speak (1)/ to us inside your head, and believe that (2)/ they should not be trusted. (3)/ No error (4)

**39.** With God's blessings and hard work, (1)/ I cleared many hurdles in life and did (2)/ reasonable with both professional and personally. (3)/ No error (4)

**40.** If you have creative streak which you have never (1)/ pursued or interested in a new field, (2)/ gather your energy and move towards it. (3)/ No error (4)

**41.** The only thing that endures and can sustain (1)/ an infant till the stage it receives immunity (2)/ comes from the consumption of mothers milk. (3)/ No error (4)

**42.** The internal and external environment we (1)/ experience in our thoughts, feelings and the (2)/ world around us also has an affect. (3)/ No error (4)

**43.** Rasayana's are the blends of tonic herbs, metals, fruits, (1)/ gums and have specific methods of production (2)/ which included the time of gathering. (3)/ No error (4)

**44.** In relationships, too, she seems too have subsisted (1)/ on nothing but the emptiness of her (2)/ heart to the master of her life. (3)/ No error (4)

**45.** Our thought have a direct impact on our body (1)/ and hence they crucially affect our (2)/ emotional and physical well-being too. (3)/ No error (4)

**46.** When you drink the sweet coconut water, (1)/ it is a metaphor for experience joy within, (2)/ free of ego and other hassles. (3)/ No error (4)

**47.** Much believe that if you are modern you (1)/ should not be religious, and vice versa, (2)/ can't spirituality and modernity coexist? (3)/ No error (4)

**48.** Why is it that they can develop only a (1)/ certain aspect of there life and not realize (2)/ their full potential? (3)/ No error (4)

**49.** If the sun and moon were balanced, which means (1)/ if heat and cold are in equilibrium, the (2)/ person is healthy. (3)/ No error (4)

**50.** Earth can be considered a cage or prison (1)/ because our choices are limited to (2)/ our available awareness and restricted. (3)/ No error (4)

**51.** If a guru is a kind of hired teacher (1)/ none of his roles hits the mark (2)/ of what is intended. (3)/ No error (4)

**52.** The growth in India is amazing, (1)/the growth from 140 million connections (2)/in 2005 to 181 million connections now is very impressed. (3)/No error (4)

**53.** The Delhi Police organize a mega (1)/function at the Thayagaraj Stadium (2)/to promote 'self defence training' for women and girls. (3)/No error (4)

**54.** All they need to do is feed their contact (1)/details, feed the IMEI number to receiving (2)/ an OTP on their mobile. (3)/ No error (4)

**55.** So, the next time you are eating sushi, (1)/you exactly know what to do with (2)/that extra wasabi that have come along. (3)/No error (4)

**56.** This is the first car for our neighbourhood Mr Sharma who (1)/ has a hard time balancing his wife (2)/ and kids on his old scooter. (3)/ No error (4)

**Directions (57–71) :** In the following passage some of the words have been left out. Read each passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

**PASSAGE–I**

The entry of foreign media has to be **(57)** by strict rules. Any intention to **(58)** the country politically or economically or any attempt at cultural **(59)** in order to make the country a slave to the designs of international powers would not be **(60)**. If the foreign media is keen on making a presence on the Indian soil, respect for the country's unity and **(61)** is essential.

**57.** (1) focus (2) figure (3) relate (4) associate

**58.** (1) calls (2) outcomes (3) sources (4) relations

**59.** (1) increase (2) decrease (3) materialize (4) neutralize

**60.** (1) commitment (2) abashment (3) abolishment (4) monument

**61.** (1) unchartered (2) uncluttered (3) beleagured (4) inspired

**PASSAGE–II**

Our reputation and image is most definitely determined by our **(62)**. Also our **(63)** tend to be habit forming, in that we have a **(64)** to act in a particular manner. Hence most people are **(65)** by their deeds and seem to have little control over their actions. We usually act according to or in response to our surroundings-our circumstances and the environment which to a great extent **(66)** our priorities and objectives.

**62.** (1) experienced (2) disordered (3) cultured (4) hampered

**63.** (1) rewards (2) problems (3) recognition (4) strength

**64.** (1) chaos (2) rituals (3) hurdles (4) competition

**65.** (1) possession (2) advancement (3) burden (4) gifts

**66.** (1) lie (2) cause (3) truth (4) effect

**PASSAGE–III**

Violence takes a heavy toll and affects public life **(67)**. High or low, known or unknown, rich or poor, popular or unpopular, no one is safe or secure today. It appears that one can harm anybody at any time and at **(68)**. A mad and sad rat race is on to make money and **(69)** power at any cost and by any means. The result is that no political party or group can now **(70)** into claim to total innocence in so far as **(71)** of violence against innocent person for personal or political gains is concerned. Violent demonstrations, rallies, hartals have become the order of the day.

**67.** (1) worst (2) best (3) hardly (4) rarely

**68.** (1) juniors (2) superiors (3) subordinate (4) companions

**69.** (1) create (2) assimilate (3) analyze (4) judge

**70.** (1) personality (2) leader (3) relation (4) thinking

**71.** (1) probability (2) capability (3) subility (4) sensibility

**Directions (72–91) :** The question below consists of a set of labelled sentences. These sentences, when properly sequenced form a coherent paragraph. Select the most logical order of sentences from among the options.

**72.** P : These features demonstrate the legal superiority of the Fundamental Rights over Directive Principles.
Q : Fundamental Rights are enforceable.
R : These stand granted and guaranteed.
S : As against these Directive Principles are non-enforceable principles which have been incorporated in the Constitution after the incorporation of the Fundamental Rights.
(1) RSPQ (2) QRSP (3) SPQR (4) PQRS

**73.** P : The fundamental rights enumerated in the Constitution are not absolute.
Q : These have not been concluded in absolute terms.
R : While describing the nature and content of each right, the Constitution also describes its limitations.
S : Some restrictions have been placed on their enjoyment.
(1) QSPR (2) SRPQ (3) PQSR (4) QRSP

**74.** P : In fact respect for social and political equality of all the people is the cornerstone of democracy.
Q : The principle of equality is the foremost principle of democracy.
R : In it all the people, without any discrimination, are treated as equal.

S : All the people enjoy equal political rights, equality before law and equality of opportunity without any discrimination.

(1) QPRS (2) QSRP
(3) QRPS (4) PRQS

**75.** P : In this world there is no such thing as a human saviour.

Q : If we follow just another human for his idea, I am sure we will end up fighting another civil war and a new generation will suffer as we suffer.

R : There is only a stable system.

S : A man always changes after a while because they are human just like you.

(1) RSQP (2) PRSQ
(3) SQRP (4) QRSP

**76.** P : Most learners have a huge discrepancy between their verbal skills and their writing ability.

Q : As a result, many Learners do not write what is actually in their mind, but dumb-downed versions so they do not make mistakes.

R : But in school, correct spelling is valued more than getting one's true vocabulary on the page.

S : They have words in their minds that they could never spell.

(1) PSRQ (2) SRQP
(3) RQPS (4) PQSR

**77.** P : On those days when nothing in our life seems to be going right, it can be really tough to see the silver lining among all those clouds.

Q : Is our glass half-full or half-empty?

R : A positive attitude benefits not only our mental health, but your physical well-being as well.

S : However, it's during these times when the ability to see the good in even the worst situations is so important.

(1) PSRQ (2) SRQP
(3) PQRS (4) QPSR

**78.** P : I have seen several young executives joining new jobs.

Q : Only a small number of these young people really believe they will succeed.

R : But majority of these young people simply don't have the belief that they can reach the top.

S : Each of them "wishes", someday he will achieve success by reaching the top.

(1) SRQP (2) PSRQ
(3) RQPS (4) SQRP

**79.** P : We have to choose daily to remain adaptable.

Q : Flexibility means being able to respond to change and deal with it.

R : It's a trait any of us can learn and it's one that is critical to our success in managing any type of change.

S : Yet being flexible isn't easy as we have to work at and practice flexibility daily.

(1) PRSQ (2) RSQP
(3) PQRS (4) QRSP

**80.** P : We think and talk a lot about Leadership and how to develop the Leadership skills.

Q : It's fun and exciting one day and then the next day we wonder why we ever wanted to lead in the first place.

R : I believe, in order to develop Leadership skills, as a leader we must be willing to acknowledge that, developing it is not an accomplishment - it's a never-ending process.

S : It's a process full of many awesome moments and many lonely days.

(1) PRSQ (2) RSQP
(3) SQRP (4) QPRS

**81.** P : These features clearly bring out the nature of Indian Bill of Rights.

Q : The Constitution grants and guarantees fundamental rights and freedom to all the people of India and constitute a vital pillar of Indian Democracy.

R : No Law can violate the Fundamental Rights of the People of India.

S : The fundamental rights incorporated in the Constitution stand at a higher pedestal than ordinary laws and the Directive Principles of State Policy.

(1) SPRQ (2) PQRS
(3) RPQS (4) SRPQ

**82.** P : The leaders I admire most are the ones who give selflessly of themselves and make personal development a priority.

Q : Both are important and one without the other does not work as I have observed some of the great leaders, I find they all have some things in common.

R : Great leaders balance personal development and organizational development.

S : I can not give of myself as a leader if I do not first take care of myself.

(1) SRQP (2) SQRP
(3) PSRQ (4) PRSQ

**83.** P : We cannot have 'theories' for everything – especially for getting along with people.

Q : Human beings are unique, perhaps somewhat illogical, and definitely unprogrammable.

R : No blueprint can give us a pre-planned design to organise our lives with other people.

S : Each one of us is sensitive; and each one of us is constantly variable – our mood and temperament change from day to day, may be even from hour to hour yet we have evolved into a society and community; a global habitat with families, institutions and corporations.

(1) QPRS (2) RQPS
(3) RPQS (4) SRQP

**84.** P : These are the only two paths available to him.
Q : All humans are bestowed with a conscience that helps us discriminate between good and bad, eternal and non eternal.
R : Although all living species are involved in sleeping, mating, defending and eating, only humans as far as we know-can think and decide what is eternally beneficial to them.
S : Based on this special quality a human can decide whether he wants to tread the path of eternal welfare or sensual enjoyment.
(1) RSPQ (2) QRSP
(3) SPQR (4) QPSR

**85.** P : A person is just like a bubble.
Q : The air has reclaimed it; the atmosphere has reclaimed it.
R : This bubble doesn't have any substance of its own, just like every other creature.
S : But when the bubble bursts, the substance that is inside the bubble, where is it?
(1) PRSQ (2) RSQP
(3) SQPR (4) QPSR

**86.** P : All have equal right to live in this world.
Q : Men and animals, all are the children of God.
R : So, one should not take away the life of another, whether he is a man or a beast of any other living being.
S : If we take to violence, our souls will be defiled and we will not be able to reach God after we die.
(1) PQRS (2) QPRS
(3) RSQP (4) RPQS

**87.** P : Everybody understands that, sports and games mean only the physical and mental fitness.
Q : Both should be given equal priority in the school and colleges to go ahead and make the bright career of the students.
R : However it has many hidden benefits as well.
S : Sports and good education both together become the way to achieve success in the life of a child.
(1) RSQP (2) QPRS
(3) PRSQ (4) PQRS

**88.** P : The leader must learn to rule himself.
Q : An organization cannot be successful if the people do not obey its laws and rules.
R : Similarly, no play is possible, if the players do not follow the rules in the play ground.
S : If he cannot rule himself, he cannot rule others.
(1) RSPQ (2) QRPS
(3) SPQR (4) QPRS

**89.** P : People of each State converse in their own language and often cannot speak or understand the regional language of other people.
Q : In such cases, English becomes the link between these people.
R : So, we cannot deny the importance of English in modern India.
S : Modern India has many large States.
(1) SPQR (2) PQSR
(3) SQPR (4) QPSR

**90.** P : He was developed into the most effective personality under the environment of rational attitude of his father and religious temperament of his mother.
Q : Swami Vivekananda was born in Calcutta, on 12th January in 1863 during Makar Sankranti festival, in a traditional Bengali Kayastha family.
R : The birth name of Swami Vivekananda was Narendranath Datta.
S : He was one of the nine children of his father, who was an attorney in Calcutta.
(1) QSRP (2) SRPQ
(3) RSPQ (4) QRSP

**91.** P : Child labour in India is the practice where children are engaged in economic activity on part time or full time basis.
Q : The practice deprives chil dren of their childhood and is harmful to their physical and mental development.
R : Poverty, lack of good schools and growth of informal economy are considered as the most important causes of child labour in India.
S : The 2001 national census of India estimated the total number of child labour, aged 5-14, to be at 12.6 million.
(1) QRSP (2) RSPQ
(3) QPSR (4) PQRS

**Directions (92–113) :** In the following questions, a sentence/part of the sentence is printed in **bold**. Below are given alternatives to the **bold** sentence/part of the sentence which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is **No Improvement.**

**92.** His policies **(were seen by much as)** crimping investment at a time slumping copper prices were weighing on the economy.
(1) were seen by mostly as
(2) were seen by many as
(3) were seen by majorly as
(4) No improvement

**93.** After months of aggressive planning, the former president brandished his business success and first term in office **(as a proofs of competence)**.

(1) as a prove of competence
(2) as proof of competence
(3) as proofs of competence
(4) No improvement

**94.** The company released a statement on Saturday paying tribute to its founder, praising his philanthropic efforts and his **(vision to health care)**.
(1) vision for health care
(2) vision on health care
(3) vision at health care
(4) No improvement

**95.** 50 Chinese couples were married at a ceremony in Colombo to mark the anniversary of **(diplomat relations between the two countries)**.
(1) diplomatic relations among the two countries
(2) diplomatic relations between the two countries
(3) diplomacy relations between each other
(4) No improvement

**96.** While addressing the assembly the officer said "It was a tit-for-tat action involving **(selected targeting)**, such actions do not last very long".
(1) selection targeting
(2) selection targeted
(3) selective targeting
(4) No improvement

**97.** Asking people to identify themselves with their **(religion and castism)** rather than being secular, he said the Constitution too would change.
(1) religion and caste
(2) religion and casting
(3) religion and casts
(4) No improvement

**98.** **(The surprise about the India vote)** was not because it fell out of line with the country's foreign policy as we know.
(1) The surprise in the Indian voting
(2) The surprise over the Indian vote
(3) The surprise on the India voted
(4) No improvement

**99.** Supporters of the 'leading power' doctrine often argue, rightly, that India must be more forthright and articulate in **(expression)** its position on issues.
(1) expressing
(2) express
(3) expressed
(4) No improvement

**100.** The process of decolonization **(who started from)** our own independence era remains unfinished even after completion of seven decades.
(1) whom started from
(2) that started from
(3) that starts from
(4) No improvement

**101.** **(The community have laid stress)** on the point that for them dignity, respect, and access to health care are non-negotiable basic rights.
(1) The community did laid stress
(2) The community had lay stress
(3) The community has laid stress
(4) No improvement

**102.** The experience so far has been that many who struggle to access jobs are **(discriminated about)**, forcing them to drop out.
(1) discriminated against
(2) discriminated for
(3) discriminated to
(4) No improvement

**103.** The failure of the recent ministerial meeting at Buenos Aires is only **(symptomatical of decline)** in its overall importance.
(1) symptomatical of a decline
(2) symptomatic of a decline
(3) symptomed of decline
(4) No improvement

**104.** It was given a large remit overseeing the rules for world trade along with the powers to punish countries violating **(those)** rules.
(1) this
(2) that
(3) these
(4) No improvement

**105.** Under the principle of cross-retaliation, these penalties could be imposed on exports from a sector different **(form there the dispute was located)**.
(1) from where the dispute was located.
(2) from where the dispute were located.
(3) from where the disputes was located.
(4) No improvement

**106.** Our thoughts make us the person we are, pondering over these thoughts can occupy our soul for **(a long periods of time)**.
(1) a longer period of time
(2) a long periodical
(3) a longer periods of time
(4) No improvement

**107.** He is usually present in the House on Wednesday as questions **(related at)** the Prime Minister's Office are listed on this day during Question Hour.
(1) related from
(2) related to
(3) related on
(4) No improvement

**108.** **(Once emerged business)** is clearly defence manufacturing and hence the group has tied up with global defence companies for starting production in India.
(1) One emerged businesses
(2) Once emerging business
(3) One emerging business
(4) No improvement

**109.** I am a soul, a free bird which has the power to (freely fly); I am not bound by the physical laws.
(1) fly freely
(2) free fly
(3) fly free
(4) No improvement

**110.** People should also look at art to learn how to be creative, live creatively, and **(how to think outside of the box)**.
(1) how to think about outside box
(2) how to think out of the box
(3) how to thinking outsided the box
(4) No improvement

**111.** When there is no thought, no bubble **(on our mind on planning)** for tomorrow and no inquiry about the present, that moment is blissful.
(1) at our mind regarding planning
(2) from our mind concerning to planning
(3) in our mind about planning
(4) No improvement

**112.** While you stay here, you **(do need not)** a blueprint of planning; you do not need to think of searching the future.
(1) do not need
(2) must need not
(3) do not need have
(4) No improvement

**113.** Once, a farmer was pulling his cart full of vegetables uphill to the market, he saw a man the roadside.
(1) sitting to
(2) sitting by
(3) sitting in
(4) No improvement

**Directions (114–133) :** You are given four passages. Read the passage carefully and select the best answer to each question out of the given four alternatives.

**Passage–I**

**(Q. No. 114–118)**

Transactional Analysis has the triangle of PAC. P means parent, A means adult, C means child. These are your three layers, as if you are a three-storeyed building.

The first floor is that of the child, the second floor is that of the parent, the third floor is that of the adult. All three exist together. This is your inner triangle and conflict. Your child says one thing, your parent says something else, and your adult, rational mind says something else. The child says 'enjoy'. For the child, this moment is the only moment; he has no other considerations. The child is spontaneous, but unaware of the consequences — unaware of past, unaware of future. He lives in the moment. He enjoys — but his enjoyment is not creative, cannot be creative. He delights — but life cannot be lived only through delight.

You cannot remain a child forever. You will have to learn many things because you are not alone here....The child has to be disciplined — and that's where the parent comes in. The parental voice in you is the voice of the society, culture, civilization; the voice that makes you capable of living in a world where you are not alone — where there are many individuals with conflicting ambitions, where there is much struggle for survival, where there is much conflict. The parental voice is that of caution. It makes you civilized. The word 'civil' is good. It means one who has become capable of living in a city, who has become capable of being a member of a group, of a society. It is needed. And then there is the third voice within you, the third layer, when you have become adult and you are no longer controlled by your parents; your own reason has come of age, you can think on your own. And these three layers are continuously fighting. The child says one thing, the parent says just the opposite, and the reason may say something totally different. There is no necessity that your adult mind agrees with your parents. Many times you find them very dogmatic, superstitious, believing in foolish things, irrational ideologies. Your parent says do it, your adult says it is not worth doing, and your child goes on pulling you somewhere else. This is the triangle within you.

**114.** Whom do we find dogmatic many times?
(1) Parent (2) Child
(3) Adult (4) All of these

**115.** What is the triangle within us?
(1) We are like a three storeyed building where in the first floor is of the child, the second floor is that of the parent and the third floor is that of the adult.
(2) The child is spontaneous, the parental voice is that of a caution and the adult has himself come of an age.
(3) Whenever you want to do something-your parent says do it, your adult says it is not worth doing and your child goes on pulling somewhere else.
(4) Our parent make us sensible, our adult makes as rational and disciplined and one child makes us carefree.

**116.** Why you cannot remain a child forever?
(1) Because you are not alone here.
(2) Because you have to become a parent
(3) Because you have to be disciplined.
(4) Because you have to become capable of living in the city

**117.** What happens when you become an adult?
(1) Being an adult gives us a vision and a mission.
(2) Being an adult we are no longer controlled by our parents.
(3) Being an adult the child inside you gets lost somewhere
(4) Being an adult gives you strength to fight against all odds.

**118.** According to the passage, you are not capable of being a member of a group, of a society until you become ______.
(1) Parent (2) Civil
(3) Dogmatic (4) Auditious

**Passage–II**

**(Q. No. 119–123)**

The Indian Space Research Organisation boosted its reputation further when it successfully launched a record 104 satellites in one mission from Sriharikota on 15th February, 2017 by relying on its workhorse PSLV rocket. An earth observation Cartosat-2 series satellite and two other nano satellites were the only Indian satellites launched; the remaining were from the United States, Israel, the UAE, the Netherlands, Kazakhstan and Switzerland. Of the 101 foreign satellites launched, 96 were from the

U.S. and one each from the other five countries. Till now Russia held the record of launching 37 satellites in a single mission, in 2014, while the National

Aeronautics and Space Administration of the U.S. launched 29 satellites in one go in 2013. Last June, ISRO had come close to NASA's record by launching 20 satellites in one mission. But ISRO views the launch not as a mission to set a world record but as an opportunity to make full use of the capacity of the launch vehicle. The launch is particularly significant as ISRO now cements its position as a key player in the lucrative commercial space launch market by providing a cheaper yet highly reliable alternative. At an orbital altitude of around 500 km, the vehicle takes about 90 minutes to complete one orbit. Though ISRO had sufficient time to put the satellites into orbit, it accomplished the task in about 12 minutes. With the focus on ensuring that no two satellites collided with each other, the satellites were injected in pairs in opposite directions. Successive pairs of satellites were launched once the vehicle rotated by a few degrees, thereby changing the separation angle and time of separation to prevent any collision.Besides setting the record for the most number of satellites launched in a single mission, the Indian space agency has launched two nano satellites weighing less than 10 kg. It is a technology demonstrator for a new class of satellites called ISRO nano satellites (INS). With many Indian universities already building and launching nano satellites, the availability of a dedicated nano satellites platform is sure to boost space research in India.

**119.** Which country has the maximum satellites launched into the space on 15th February, 2017?
(1) The U.S. (2) Russia
(3) Israel (4) Switzerland

**120.** Who among the following has a record of launching maximum satellites in one go in the year 2014?
(1) Russia
(2) The U.S.
(3) The U.A.E.
(4) India

**121.** In how many minutes the ISRO put the satellite into orbit which was launched by it recently?
(1) 90 minutes
(2) 37 minutes
(3) 20 minutes
(4) 12 minutes

**122.** What can be the suitable title to the passage ?
(1) ISRO sets the bar high
(2) ISRO launching the satellites
(3) India's space working
(4) NASA – A space warrior

**123.** Why the recent launch of satellite is significant to ISRO?
(1) It is now known for expensive launch of satellite into the space.
(2) It is now identified as key player in the profitable commercial space launch market by giving cheap and highly reliable launch alternative.
(3) It is now known to be close to launching maximum satellites at one go.
(4) None of these

**Passage–III**
**(Q. No. 124–128)**

Let's move to the crackling topic of the SC's firecracker ban in Delhi. Like me and millions of other children raised in India, Masaba must have celebrated Diwali with new clothes, sweets and the quintessential rockets, anars and phuljharis. But when she supports the ban on firecrackers because of the pollution it creates, the earthworms once again flail desperately, not by quoting statistics or making logical arguments to refute her point but by muck-raking. 'Don't mess with our ancient.

traditions,' they say. I would like to tell them that if we stuck to all our traditions just because they're ancient then we should still be pushing widows into funeral pyres to commit sati and get our children married off at the age of eight.

As much as I would like to see the delight on my daughter's face — the same glee I had as a child — while bursting atom bombs and laris, it is the present scenario and not nostalgia that must dictate my actions. If even doctors welcome the ban as they feel fumes from firecrackers take pollution levels beyond safe limits, then perhaps we need to change our traditional values and create new ones. If saying that makes me a bad Indian, then so be it.

One of the greatest privileges I have — in fact because of the very background that they are trying to smear — stems from the fact that I was lucky enough to have a mother who has raised me to believe that equality isn't one of my privileges but it is my right. One that was hard won by some brave and fearless women, women who set the right precedent for other women by standing against inequality.

The flailing trollers do not realize that you cannot shame us by pulling down our mothers, those fiercely independent women who have lived life on their own terms.

who have not just talked the talk but walked the walk. Yes, you can reason with us by presenting a logical argument but this seems to be beyond the resources of these anonymous creatures hiding their faces in the mud. And yes one last thing, for all those claiming to be the flag-bearers of ancient traditions, it would be lovely if you adhered to your so-called traditional ways completely. Why do you write open letters, tweet and troll in the language of the Brits? Why not go traditional there as well, use only our ancient languages and spare us your venom-filled and grammatically incorrect English?

**124.** Who do you think is the author of the passage?
(1) Feminist
(2) Social activist
(3) Politician
(4) Designer

**125.** What according to the author should dictate his/her action?
(1) Present scenario
(2) Flailing trollers
(3) Equality
(4) Nostalgia

**126.** According to the author, what should flag-bearers of ancient traditions do?
(1) They should spare people from reading their grammatically incorrect English.
(2) They should stop writing open letters, tweets and trolls.
(3) They should adhere to traditional ways completely.
(4) They should keep the flag of traditions held high.

**127.** According to the passage why do the doctors welcome the ban?
(1) New clothes, sweets and fire crackers are nothing but the waste of money.
(2) Banning firecrackers is a decision taken by the government and we should respect it.
(3) This ban supports logic and we all should support logic.
(4) Fumes from firecrackers take pollution levels beyond safe limits.

**128.** What do you infer by the term "not just talked the talk but walked the walk"?
(1) It means not just talking but doing some action too.
(2) It means not just talking but walking too.
(3) It means presenting logical arguments.
(4) It means fighting for your rights.

**Passage–IV**
**(Q. No. 129–133)**

The first thing is that the rich people of the world should start living in communes. Let those communes be of the rich! So they will not be dragged down from their standard of life, their comforts, and their luxuries. Let there be, around the world, hundreds of communes of rich people – that is, rich communes.

And to me, wealth is a certain kind of creativity. If five thousand rich people who have all created wealth individually are together, they can create wealth a millionfold.

Their standard will not go lower; their standard could go even higher. Or they can start sharing. They can start inviting people who are not rich but who are creative in some other way, who will enhance the life of their commune although they may be poor.

Five thousand rich people, together with their genius for creating wealth, are capable of creating so much wealth that they can invite thousands of other people who may not be rich in the sense of being wealthy, but who may be rich as painters, poets, dancers, singers.

What are you going to do only with wealth? You cannot play music on money; you cannot dance just because you have so much cash in the bank. And these rich communes can start becoming bigger, absorbing more and more creative people. They can make beautiful places all around the world, and slowly, new people can be absorbed.

For example, you will need plumbers, however rich you may be; you will need mechanics; technicians; you will need shoemakers. Invite them – and they come to you not as servants, but as members of the commune. Slowly, we can transform the whole world – without any bloodshed and without any dictatorship.

A communism that comes out of love, out of intelligence, out of generosity, will be real. A communism that comes through force is going to be unreal. There is not a single man in the world, howsoever poor, who has nothing to contribute. Around the world all the rich communes will need people; and slowly, slowly your commune will become bigger and bigger.

The rich will not become poor, but the poor will become rich, and respectable, and equal – in no way inferior to anybody else – because they are also functioning in the same way as anybody else. And whatever they are doing is needed as much as anybody else's expertise is needed.

**129.** According to the passage, what is an advantage of rich people living in communes?
(1) So that communes belong to the rich and their standard of living gets uplifted.
(2) So that all of them can club their creativity together.
(3) Because rich people need plumbers, mechanics, shoemaker and technicians too.
(4) Because you cannot dance just because you have cash in the bank.

**130.** Who all have something to contribute towards the making of the communes?
(1) The rich
(2) The serving class
(3) The worker class
(4) Everybody

**131.** According to the passage, what kind of communism would we prefer?
(1) Bigger and bigger
(2) That comes out of love, out of intelligence and out of generosity.
(3) That comes with force
(4) That comes from anybody else's expertise

**132.** According to the passage, what is not necessarily true about those who are not rich in the sense of being wealthy?
(1) They may be poor but they would still have something to contribute.
(2) They cannot play music or dance.
(3) They may not be wealthy, but they may be rich as painters, poets, dancers or singers.
(4) They may be able of making your surroundings beautiful

**133.** Suggest a suitable topic to the passage.
(1) Wealth is creativity
(2) Poor are not our servant
(3) Share your money
(4) Making the whole world rich

**Directions (134-138) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

Over the years Blyton (**134**) for a lot of things, especially for being (**135**) and creating two-dimensional characters. But for many of us, the name brings up the nostalgia of rainy afternoons (**136**) snuggled up with our noses in her books and being transported to a world where good means good and bad means bad, with nothing (**137**)between. I remember reading in a preface that many girls had written asking Blyton how (**138**) could enrol at Malory Towers or St. Clare's!

**134.** (1) has being criticised
(2) has been criticised
(3) has being criticising
(4) had being criticising

**135.** (1) racism
(2) race
(3) racist
(4) racialism

**136.** (1) cosiness
(2) cosiest
(3) cosily
(4) cosying

**137.** (1) into (2) inside
(3) onto (4) in

**138.** (1) them
(2) they
(3) themselves
(4) their

**Directions (139-143) :** In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank (numbered) out of the four alternatives.

The climate question (**139**) a leapfrog era for India's development paradigm. Already, the country has chalked out an (**140**) policy on renewable energy, hoping to generate a massive 175 gigawatts of power (**141**) green sources by 2022. This has to be (**142**) pursued, breaking down the barriers to wider (**143**) of rooftop solar energy at every level and implementing net metering systems for all categories of consumers.

**139.** (1) present (2) presenting
(3) presents (4) presentation

**140.** (1) ambition
(2) ambitiously
(3) ambitionless
(4) ambitious

**141.** (1) from (2) for
(3) of (4) off

**142.** (1) resolute
(2) resolution
(3) resoluteness
(4) resolutely

**143.** (1) adopt (2) adopting
(3) adopter (4) adoption

**Directions (144-148) :** Read the passage carefully and choose the best answer to each question out of the four alternatives

The activities will start in the next 20 days time, promising to give an exciting glimpse of Vizag to aero adventure lovers in a way never experienced before. "We have partnered with AP Tourism to promote aero adventures for the first time in the city. We will be getting one powered parachute and a paratrike in two weeks time following which aero adventure activities will commence," says B Balaram Naidu, director of Livein Adventures. The two-seater powered parachute will be equipped with a 55 hp engine and will take people up to a height of 500 feet. With an experience of nearly a decade in the Indian Navy as a sky diving and aero adventure trainer, Balaram now wants to make Vizag as destination of adventure sports, bringing in a clutch of activities through his adventure company Livein

Adventures. His passion has led to the creation of like-minded adventurers in the city who regularly converge at Mangamaripeta for kayaking and Kambalakonda for eco-friendly adventure sports activities like zip liner and Burma bridge.

**144.** Which activity is available at Mangamaripeta?
(1) Kayaking
(2) Paratriking
(3) Zip liner
(4) Burma Bridge

**145.** Mr. B Balaram Naidu has worked with which of the following?
(1) Indian Airforce
(2) Indian Army
(3) Indian Navy
(4) Indian Paratroopers

**146.** What equipment will be employed by Livein Adventures to provide aero adventures?
(1) Kayaks
(2) Zip line
(3) Paratrike
(4) Burma Bridge

**147.** Livein Adventures has collaborated with whom to bring adventure activities to Vizag?
(1) B Balaram Naidu
(2) AP Tourism
(3) Indian Navy
(4) The city of Vizag

**148.** What is common between Burma bridge and powered parachute?
(1) Both are adventure activities
(2) Both these are available at Kambalakonda
(3) Both are being launched by Livein Adventures
(4) Both are an initiative by Vizag city authorities

**Directions (149–153) :** Read the passage carefully and choose the best answer to each question out of the four alternatives.

There may be some merit in this, but clearly, we need to look at the hawkers issue more broadly. For quite some time now, many middle-class citizens groups have urged strict action against hawkers, asking residents not to favour their business. The terms routinely used to refer to hawkers and vendors is "menace", with their everyday businesses described as "encroachments" on public space. This, despite the fact that an existing 2014 central law, the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, protects their presence as a part of the right to livelihood. The law specifies the number of licensed hawkers permitted and outlines the process to implement a fair street vending policy. Mumbai and other cities have failed to implement the law to date, with the Mumbai municipality having frozen hawker licenses since 1978. As a result, only a fraction of Mumbai's hawkers are licensed. Hawkers desire legal status — their illegality makes them vulnerable to extortion and harassment by a whole range of State and non-State actors. Unfortunately, by looking

upon the hawkers question as only a clearing of pavements issue, we have neglected to see their contribution in several other ways. Firstly, hawkers are not the only ones sullying our pavements. But they are far easier to target as villains than the middle-class who use pavements for car parking and shops/ restaurants who unabashedly extend their shopfronts onto footpaths. Secondly, hawking is also an employment issue. It provides the urban poor a means to earn a legitimate livelihood, and in fact, many sell goods produced in small-scale or home-based industries.

**149.** Why does the middle class think of hawking as a menace?
(1) They think hawking is illegal activity
(2) They think hawkers take away business from their shops
(3) They think once hawkers get licenses it will be difficult to evict them
(4) They think hawking crowds them out of public space

**150.** Why do only a small number of Mumbai's hawkers have licenses?
(1) Hawkers are illiterate hence fail to follow rules
(2) Authorities have stopped issuing licenses
(3) Licenses have become a source of extortion
(4) Hawkers get tied to a location once they have a license

**151.** What makes the middle class too guilty of the same crime they blame hawkers?
(1) Ill treatment of hawkers
(2) Turning a blind eye when hawkers face extortion
(3) Encroaching public spaces
(4) Not promoting small scale industries

**152.** What makes hawkers vulnerable to extortion?
(1) Their poverty
(2) The fact that they do not have unions
(3) Their illiteracy
(4) Authorities not issuing them licences

**153.** What is the positive externality of hawking?
(1) It makes city dwelling more fruitful
(2) It is a tourist attraction
(3) It slows down traffic and hence accidents
(4) It generates employment opportunities

**Directions (154-180) :** In each of the following questions, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which bestexpresses the same sentence in Indirect/Direct speech.

**154.** He said, "I work in an army hospital which is now being renovated."
(1) He said that he worked in an army hospital which was now being renovated.
(2) He said that he works in an army hospital which was then being renovated.
(3) He said that he works in an army hospital which was now being renovated.
(4) He said that he worked in an army hospital which was then being renovated.

**155.** They said, "We play cricket every Sunday here at the club."
(1) They said that they played cricket every Sunday here at the club.
(2) They said that they played cricket every Sunday there at the club.
(3) They said that they play cricket every Sunday there at the club.
(4) They said that they play cricket every Sunday here at the club.

**156.** She said, "I love my grandparents thus I take good care of them."
(1) She says that she loved her grandparents thus she took good care of them.
(2) She said that she loves her grandparents so she took good care of them.
(3) She said that she loves her grandparents thus she took good care of them.
(4) She said that she loved her grandparents so she took good care of them.

**157.** He said, "I don't waste time as I now I am very busy."
(1) He said that he didn't waste time as he was very busy now.
(2) He said that he didn't waste time as he is very busy then.
(3) He said that he didn't waste time as he is very busy now.
(4) He said that he didn't waste time as he was very busy then.

**158.** The lady said, "I am waiting for someone to come here and pick me up."
(1) The lady said that she was waiting for someone to go here and pick her up.
(2) The lady said that she was waiting for someone to go there and pick her up.
(3) The lady said that she is waiting for someone to go there and pick her up.
(4) The lady said that she is waiting for someone to go here and pick her up.

**159.** He said, "She is driving a car now after many years."
(1) He said that she now was driving a car after many years.
(2) He said that she then is driving a car after many years.
(3) He said that she was driving a car then after many years.
(4) He said that she now is driving a car after many years.

**160.** The DJ said, "The audience is enjoying the new music that I created just for this show."
(1) The DJ said that the audience are enjoying the music that he has created just for that show.
(2) The DJ said that the audience is enjoying the music that he had created just for this show.
(3) The DJ said that the audience was enjoying the music that he had created just for this show.
(4) The DJ said that the audience were enjoying the music that he had created just for that show.

**161.** My sister said, "I am not going to college as now I have a study break."
(1) My sister said that she was not going to college now as she had a study break.
(2) My sister said that she is not going to college then as she had a study break.
(3) My sister said that she is not going to college now as she had a study break.
(4) My sister said that she was not going to college then as she had a study break.

**162.** The executive said to his senior, "I have completed the work a week ago."
(1) The executive said that he had completed the work a week ago.
(2) The executive said that he has completed the work a week before.
(3) The executive said that he had completed the work a week before.
(4) The executive said that he has completed the work a week ago.

**163.** The sportsman said, "I have won a prize in the race that was held here yesterday."
(1) The sportsman said that he have won a prize in the race that was held there yesterday.
(2) The sportsman said that he had won a prize in the race that was held there a day before.
(3) The sportsman says that he has won a prize in the race that was held there a day before.
(4) The sportsman said that he has won a prize in the race that was held here yesterday.

**164.** The manager said, "The janitor has washed these linen today."
(1) The manager said that the janitor had washed those linen today.
(2) The manager said that the janitor has washed those linen that day.
(3) The manager said that the janitor had washed those linen that day.
(4) The manager said that the janitor has washed those linen today.

**165.** Priya said, "I have not met the boy hence I cannot make a decision."
(1) Priya says that she had not met the boy hence she could not make a decision.
(2) Priya said that she has not met the boy thence she could not make a decision.
(3) Priya says that she has not met the boy hence she could not make a decision.
(4) Priya said that she had not met the boy thence she could not make a decision.

**166.** The workman said, "I have been working in this factory since the day it started."
(1) The workman said that he had been working in that factory since the day it has started.
(2) The workman said that he has been working in that factory since the day it had started.
(3) The workman said that he had been working in that factory since the day it had started.
(4) The workman said that he has been working in that factory since the day it has started.

**167.** Arun said, "I bought this ring for my mother."
(1) Arun said that he has bought that ring for his mother.
(2) Arun said that he had bought this ring for his mother.
(3) Arun said that he has bought this ring for his mother.
(4) Arun said that he had bought that ring for his mother.

**168.** The cab driver said to me, "I was waiting for you for a long time."
(1) The cab driver said to me that he was waiting for me for a long time.
(2) The cab driver said to me that he is waiting for me for a long time.
(3) The cab driver said to me that he has been for me for a long time.
(4) The cab driver said to me that he had been waiting for me for a long time.

**169.** Zakir said, "Here is the book that I have been looking for."
(1) Zakir said that, there was the book that he has been looking for.
(2) Zakir said that, here was the book that he had been looking for.
(3) Zakir said that, there was the book that he had been looking for.
(4) Zakir said that, here was the book that he has been looking for.

**170.** Mother said to me, "Will you come here and help me?"
(1) Mother asks me to come there and help her.
(2) Mother asked me if I would go there and help her.
(3) Mother asked me to go here and help her.
(4) Mother is asking me to come here and help her.

**171.** The clerk said, "What can I do for you?"
(1) The clerk asked what he could do for me.
(2) The clerk asked what he can do for me.
(3) The clerk asked what he could be doing for me.
(4) The clerk asked what he can be doing for me.

**172.** The professor told the class, "I will give you a test on Friday."
(1) The professor told the class that he would give us a test on Friday.
(2) The professor told the class that he will be giving us a test on Friday.
(3) The professor told the class this that he would give us a test on Friday.
(4) The professor told the class this that he will be giving us a test on Friday.

**173.** They said, "We have to complete this task by noon."
(1) They said that they had to complete that task by noon.
(2) They said that they had to be completing that task by noon.
(3) They said that we had to complete that task by noon.
(4) They said that we had to be completing that task by noon.

**174.** Jyoti said to her sister, "This dress is so pretty."
(1) Jyoti said to her sister this that dress was so pretty.
(2) Jyoti said to her sister that that dress was so pretty.
(3) Jyoti said to her sister that that dress is so pretty.
(4) Jyoti said to her sister this that dress is so pretty.

**175.** Deepti said to Pravin, "Do you like to watch movies?"
(1) Deepti asked Pravin if he likes to watch movies.
(2) Deepti asked Pravin does he liked to watch movies.
(3) Deepti asked Pravin if he liked to watch movies.
(4) Deepti asked Pravin does he likes to watch movies.

**176.** "How often do you go to the temple?" grandmother said to me.
(1) Grandmother asked me how often I went to the temple.
(2) Grandmother asked me how often I came to the temple.
(3) Grandmother asked me how often I had went to the temple.
(4) Grandmother asked me how often I had gone to the temple.

**177.** They said, "We are taking the medicines every day."
(1) They said that they were taking the medicines every day.
(2) They said that we were taking the medicines every day.
(3) They said that they are taking the medicines every day.
(4) They said that we are taking the medicines every day.

**178.** They said, "We have been waiting here since morning."
(1) They said that we had been waiting there since morning.
(2) They said that they had been waiting there since morning.
(3) They said that they have been waiting there since morning.
(4) They said that we have been waiting there since morning.

**179.** They said, "We have taken exercising seriously."
(1) They said that they have taken exercising seriously.
(2) They said that we had taken exercising seriously.
(3) They said that we have taken exercising seriously.
(4) They said that they had taken exercising seriously.

**180.** They said, "We will not bother the workers. "
(1) They said that they would not bother the workers.
(2) They said that they would not be bothering the workers.
(3) They said that they will not bother the workers.
(4) They said that they will not be bothering the workers.

**Directions (181–200) :** In each of the following questions, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in passive/active voice.

**181. Does he race cars?**
(1) Is racing of the cars done by him?
(2) Are cars raced by him?
(3) Does he the racing of cars?
(4) Are race cars done by him?

**182. They play board games at the clubhouse.**
(1) Board games are played by them at the clubhouse.
(2) Is playing of the games done by them at the clubhouse.
(3) Clubhouse is the place where they play board games.
(4) Board games were played by them at the clubhouse.

**183. She does not sing classical songs.**
(1) Singing of classical songs is not done by her.
(2) Classical songs are not sung by her.
(3) She never does singing of classical songs.
(4) Classical songs were not sang by her.

**184.** expresses the same sentence in Passive/Active voice.
Do you speak Marathi?
(1) Is speaking of Marathi done by you?
(2) Do you yourself speak Marathi?
(3) Is Marathi spoken by you?
(4) Are Marathi ever spoken by yourself?

**185.** She is reading a novel.
(1) She has had read a novel.
(2) She reads a novel.
(3) Reading of a novel is being done by herself.
(4) A novel is being read by her.

**186.** Do Peter and John attend the daily sermons?
(1) Are the daily sermons attended by Peter and John?
(2) Is attending of the daily sermons done by Peter and John?
(3) Do Peter and John go to attend these daily sermons?
(4) By Peter and John are these daily sermons attended by.

**187.** His brother doesn't drive a car.
(1) Driving of a car is not done by his brother.
(2) The car is not being driven by his brother.
(3) Driving of a car has not been done by his brother.
(4) A car is not driven by his brother.

**188.** Does she like English literature?
(1) Is liking of English literature done by her?
(2) Is English literature liked by her?
(3) She likes English literature, doesn't she?
(4) Are English's literature liked by her?

**189.** I play football with my friends at that ground.
(1) I have played football with friends of mine at that ground.
(2) By that ground I have played football with my friends.
(3) Football is played by me with my friends at that ground.
(4) Playing of football has been done by me and my friends.

**190.** He doesn't pay tips ever.
(1) Paying of tips has never been done by him.
(2) Tips are never paid by him.
(3) Tipping of payment has not been done by him.
(4) He has never ever paid any tips.

**191.** He always forgets my name.
(1) My name is always forgotten by him.
(2) Forgetting of my name has been done by him always.
(3) Always he himself forgets my name.
(4) My name has been forgotten by him.

**192.** He never forgets to get gifts for me.
(1) Forgetting of gifts for me has never been done by him.
(2) He will never ever forget to get gifts for me.
(3) Forget to get gifts for me is never done by him.
(4) Getting gifts for me is never forgotten by him.

**193.** The hammer hit the nail on its head.
(1) Hitting of the nail was done by the hammer on its head.
(2) On its head the nail has had been hit by the hammer.
(3) Hammering the head of the nail was done.
(4) The nail was hit by the hammer on its head.

**194.** Six square faces join to make a cube.
(1) Joining of six square faces is done to make a cube.
(2) Making of cube is done by joining six square faces.
(3) Faces which are square are joined by to make a cube.
(4) A cube is made by joining six square faces.

**195.** Do crows like to eat grain?
(1) Is liking of grain eating done by crows?
(2) Is eating grain liked by crows?
(3) Are grain eating liked by crows?
(4) Is grain eaten by crows and liked?

**196.** She needs to clean the floor right now.
(1) The floor needs to be cleaned by her right now.
(2) Cleaning of the floor needs to be done by her right now.
(3) Right now cleaning of floor is needed by her.
(4) She is needing right now to clean the floor.

**197.** Does he sing only Ghazals?
(1) Is singing of only Ghazals done by him?
(2) He sang only Ghazals, did he?
(3) He is a singer of only Ghazals, isn't he?
(4) Are only Ghazals sung by him?

**198.** Does he respect his elders?
(1) Is respecting of elders done by him?
(2) His elders are being respected by him, aren't they?
(3) Are his elders respected by him?
(4) He respects his elders, doesn't he?

**199.** I keep the butter in the fridge.
(1) The butter is kept in the fridge by me.
(2) Keeping of the butter in the fridge is done by me.
(3) In the fridge I keep the butter.
(4) The fridge is the place where the butter is being kept.

**200.** Mary kept her schedule meticulously.
(1) Mary's schedule was kept meticulously by her.
(2) Keeping the schedule meticulously has been done by Mary.
(3) Mary keeps meticulousness in her schedule.
(4) Her schedule would be kept meticulously by Mary.

## ANSWERS

| | | | |
|---|---|---|---|
| **1.** (1) | **2.** (2) | **3.** (3) | **4.** (4) |
| **5.** (4) | **6.** (4) | **7.** (2) | **8.** (2) |
| **9.** (3) | **10.** (1) | **11.** (4) | **12.** (3) |
| **13.** (2) | **14.** (3) | **15.** (4) | **16.** (2) |
| **17.** (3) | **18.** (3) | **19.** (2) | **20.** (4) |
| **21.** (1) | **22.** (2) | **23.** (2) | **24.** (2) |
| **25.** (2) | **26.** (2) | **27.** (2) | **28.** (2) |
| **29.** (2) | **30.** (3) | **31.** (1) | **32.** (4) |
| **33.** (1) | **34.** (1) | **35.** (1) | **36.** (2) |
| **37.** (1) | **38.** (2) | **39.** (3) | **40.** (2) |
| **41.** (3) | **42.** (3) | **43.** (3) | **44.** (1) |
| **45.** (1) | **46.** (2) | **47.** (1) | **48.** (2) |
| **49.** (1) | **50.** (3) | **51.** (*) | **52.** (3) |
| **53.** (1) | **54.** (2) | **55.** (3) | **56.** (1) |
| **57.** (1) | **58.** (2) | **59.** (3) | **60.** (1) |
| **61.** (4) | **62.** (1) | **63.** (2) | **64.** (3) |
| **65.** (1) | **66.** (3) | **67.** (2) | **68.** (2) |
| **69.** (3) | **70.** (1) | **71.** (1) | **72.** (2) |
| **73.** (3) | **74.** (3) | **75.** (2) | **76.** (1) |
| **77.** (4) | **78.** (2) | **79.** (4) | **80.** (1) |
| **81.** (4) | **82.** (3) | **83.** (1) | **84.** (2) |
| **85.** (1) | **86.** (2) | **87.** (3) | **88.** (2) |
| **89.** (1) | **90.** (4) | **91.** (4) | **92.** (2) |
| **93.** (2) | **94.** (1) | **95.** (2) | **96.** (3) |
| **97.** (1) | **98.** (2) | **99.** (1) | **100.** (2) |
| **101.** (3) | **102.** (1) | **103.** (2) | **104.** (3) |
| **105.** (1) | **106.** (1) | **107.** (2) | **108.** (3) |
| **109.** (1) | **110.** (2) | **111.** (3) | **112.** (1) |
| **113.** (2) | **114.** (4) | **115.** (3) | **116.** (1) |
| **117.** (2) | **118.** (2) | **119.** (1) | **120.** (1) |
| **121.** (4) | **122.** (1) | **123.** (2) | **124.** (2) |
| **125.** (1) | **126.** (3) | **127.** (4) | **128.** (1) |
| **129.** (1) | **130.** (4) | **131.** (2) | **132.** (3) |
| **133.** (4) | **134.** (2) | **135.** (3) | **136.** (3) |
| **137.** (4) | **138.** (2) | **139.** (3) | **140.** (4) |
| **141.** (1) | **142.** (4) | **143.** (4) | **144.** (1) |
| **145.** (3) | **146.** (3) | **147.** (2) | **148.** (1) |
| **149.** (4) | **150.** (2) | **151.** (3) | **152.** (4) |
| **153.** (4) | **154.** (4) | **155.** (2) | **156.** (4) |
| **157.** (4) | **158.** (2) | **159.** (3) | **160.** (4) |
| **161.** (4) | **162.** (3) | **163.** (2) | **164.** (3) |
| **165.** (4) | **166.** (3) | **167.** (4) | **168.** (4) |
| **169.** (3) | **170.** (2) | **171.** (1) | **172.** (1) |
| **173.** (1) | **174.** (2) | **175.** (3) | **176.** (1) |
| **177.** (1) | **178.** (2) | **179.** (4) | **180.** (1) |
| **181.** (2) | **182.** (1) | **183.** (2) | **184.** (3) |
| **185.** (4) | **186.** (1) | **187.** (4) | **188.** (2) |
| **189.** (3) | **190.** (2) | **191.** (1) | **192.** (4) |
| **193.** (4) | **194.** (4) | **195.** (2) | **196.** (1) |
| **197.** (4) | **198.** (3) | **199.** (1) | **200.** (1) |

## EXPLANATIONS

**1.** (1) **Abnegation (Noun)** = renunciation; denial; abandonment; rejection.

**Look at the sentence :**

It is part of the abnegation of learning and the senseless worship of youth that now distort our values.

**Excess (Noun)** = surplus; overabundance; profusion.

**Yielding (Adjecting)** = a yielding person can change the way they normally behave; producing or furnishing; giving way under pressure.

**Admittance (Noun)** = right of entry; admission; acceptance; ingress.

**2.** (2) **Bereft (Adjective)** = deprived of; stripped of; not having something or feeling great loss.

**Look at the sentence :**

After the last of their children had left home the couple felt utterly bereft.

**Populous (Adjective)** = densely populated; crowded; heavily settled.

**3.** (3) **Carouse (Noun/Verb)** = drink and make merry; frolic; romp; celebrate; to enjoy yourself by drinking alcohol.

**Look at the sentence :**

We had been carousing till the early hours and were exhausted.

**Grieve (Verb)** = feel intense sorrow, cause great distress to someone.

**Overlook (Verb)** = fail to notice; leave unnoticed; fail to consider.

**Disregard (Verb)** = Pay no attention to; ignore.

**4.** (4) **Aggrandize (Verb)** = increase the power, status or wealth of; to make someone more important; acclaim; boost.

**Belittle (Verb)** = denigrate; trivialize; undervalue; underrate.

**Look at the sentences :**

He urged women to be the sole participants in these acts, in order to aggrandize the emotional force of the movement.

Though she had spent hours fixing the computer, he belittled her efforts.

**Parlay (Verb)** = to use or develop money, skills etc. in a way that makes more money or leads to success.

**Look at the sentence :**

They parlayed a small inheritance into a vast fortune.

**5.** (4) **Construe (Verb)** = to interpret the meaning of something; to understand the meaning of other people's actions in a particular way; elucidate; decode.

**Obscure (Verb)** = to make something difficult to discover and understand, hide; conceal, confuse.

**Look at the sentences :**

Any changes to the plan would be construed as indecision.

Managers deliberately obscured the real situation from federal investigators.

**6.** (4) **Exigent (Adjective)** = demanding; urgent; clamant; needing urgent attention; all-important.

**Usual (Adjective)** = habitual; regular; normal; happening or done most often.

**Look at the sentences :**

**Exigent** circumstance simply means that the officers must act quickly.

The exigent demands of her contemporaries music took a toll on her voice.

The library is open for business as usual despite the snowstorm.

**Instant (Adjective)** = imminent; immediate; instantaneous.

**7.** (2) **Alarums and Excursions** = frantic activity that causes a clamor; confused activity and uproar.

**Look at the sentence :**

What on earth is going on? The alarums and excursions in the living room woke me from a sound sleep-keep it down!

**8.** (2) **Up in the air (about someone or something)** = still to be settled; unresolved; undetermined.

**Look at the sentence :**

The whole future of the project is still up in the air.

**9.** (3) **Give oneself airs** = to act better than one really is; to pretend to be good or to be superior.

**Look at the sentence :**

Pay no attention to her. she is just giving herself airs.

**10.** (1) **Alphabet soup** = a confusing or confused mixture of things; incomprehensible or confusing.

**Look at the sentence :**

All those institutions of the European parliament are confusing - a real alphabet soup.

**11.** (4) **Be all one to** = make no difference to; to be unimportant to (someone) what happens.

**Look at the sentence :**

I would actually prefer to continue working on a freelance basis, if it's all one to you.

**12.** (3) **An article of faith** = a firmly held belief; something that you believe in very strongly.

**Look at the sentence :**

Democracy is the religion of modern times and equality its fundamental article of faith.

**13.** (2) **In the ascendant** = rising in power or influence; gaining in status.

**Look at the sentence :**

While the team was in the ascendant during the 1990s, its manager was quietly securing a spot for himself in the league's administration.

**14.** (3) **Bring home the bacon** = supply material support; to earn money, as from steady employment; to be successful.

**Look at the sentences :**

My wife brings home the bacon, while I watch the kids.

After so many losing seasons, we definitely need a new quar-

terback-someone who can really bring home the bacon.

**15.** (4) **Have the ball at your feet** = to be in the best position to do something; to be in control.

**Look at the sentence :**

With your grades and extracurriculars, you'll have the ball at your feet in your college search.

**16.** (2) **Banana oil** = superfluous, disingenuous, or nonsensical talk.

**Look at the sentence :**

Look, I know I won't get past the first round of this tournament, so you can stop feeding me banana oil.

**17.** (3) **Abridgement** = a shortened version of a larger work.

**Condiment** = a substance that is used to add flavour to food.

**Bereavement** = the death of a close friend or relation.

**18.** (3) **Absolutist** = a person who holds absolute principles in political, philosophical or theological matter.

**Biblicist** = a person who interprets the Bible literally.

**Clavieriste** = keyboardist; a person who plays an electronic keyboard.

**19.** (2) **Ascetic** = a person who is self-disciplined and abstains from all forms of indulgence.

**Virtuoso** = a person highly skilled in music or another artistic pursuit; maestro; genius.

**Connoisseur** = an expert judge in matters of taste.

**20.** (4) **Cynosure** = a person or thing that is the centre of attention or admiration.

**Demagogue** = a political leader who wins support by exciting the emotions of common people.

**Epicure** = a person who takes particular pleasure in fine food and drink; gourmet.

**21.** (1) **Effeminate** = of a man, having characteristics regarded as typical of a woman; unmanly; womanish.

**Fugitive** = a person who has escaped from captivity or is in hiding.

**Heretic** = a person believing in or practising religious heresy; unorthodox.

**22.** (2) **Polyglot** = a person who knows and is able to use several languages.

**Lunatic** = a person who is mentally ill; maniac; madman.

**Recluse** = a person who lives a solitary life and tends to avoid other people.

**23.** (2) **Highbrow** = intellectual or rarefied in taste.

**Escapism** = a way of avoiding an unpleasant or boring life.

**Henpeck** = of a woman, continually criticize and order about her husband or other male partner.

**24.** (2) **Bohemian** = a socially unconventional person especially one who is involved in the arts.

**Apostate** = a person who renounces a religious or political belief.

**Arbitrator** = an independent person or body officially appointed to settle a dispute; adjudicator.

**25.** (2) **Cannibal** = a person who eats the flesh of other human beings; man-eater.

**Chauvinist** = a person displaying aggressive or exaggerated patriotism.

**Coquette** = a woman who likes to attract attention by behaving in a pleasant but not serious way.

**26.** (2) **Debonair** = of a man, confident, stylish and charming

**Gourmand** = a person who enjoys eating and often eats too much; gourmet.

**27.** (2) **Bale** = a large bound bundle of paper, hay or cotton.

**Cache** = a collection of items of the same type stored in a hidden place.

**Brood** = offspring, progeny, young.

**28.** (2) **Narcissist** = a person who has an excessive interest in or admiration of themselves.

**Iconoclast** = a person who attacks or criticizes cherishesd beliefs.

**Impregnable** = invulnerable; impenetrable.

**29.** (2) **Adjuration (Noun)** = affidavit; deposition; pledge.

**Admonition (Noun)** = reprimand, rebuke, admonishment.

**Aestivation (Noun)** = prolonged torpor or dormancy during a hot period.

**Adulteration (Noun)** = contamination.

**30.** (3) **Ambiguous (Adjective)** = equivocal, ambivalent; arguable.

**Acrimonious (Adjective)** = bitter; caustic, scathing sarcastic.

**Alacritous (Adjective)** = brisk or lively; quick, rapid.

**Anonymous (Adjective)** = unnamed; incognito; of unknown name.

**31.** (1) **Unmanageable (Adjective)** = troublesome; cumbersome; difficult to manage.

**Impenetrable (Adjective)** = impossible to pass through; impossible to understand.

**Unassailable (Adjective)** = impregnable.

**Unfathomable (Adjective)** = incapable of being fully explored or understood.

**32.** (4) **Conversed (Adjective)** = maintaining a familiar association.

**Accused (Noun)** = a person charged with a crime.

**Reverse (Verb)** = move backward.

**33.** (1) **Symbol (Noun)** = sign; character.

**Role (Noun)** = part, character

**Badge (Noun)** = breastpin, brooch.

**34.** (1) **Ruled over** = to be ruled.

**35.** (1) **Elite (Adjective)** = a select group that is superior in terms of ability or qualities to the rest of a group.

**36.** (2) **There is no denying** is used for saying that something

is clearly true; actually; certainly.

**37.** (1) **Look at the structure :**
Subject + used to + $V_1$
Hence, He used to sit day and night should be used here.

**38.** (2) The possessive case of 'we' is 'our'.
Hence, to us inside our head ........should be used here.

**39.** (3) **Reasonable (Adjective)** = fair; acceptable and appropriate in a particular situation.
Hence, reasonable with both professionally and personally or reasonable with both profession and myself......should be used here.

**40.** (2) Here, pursued or are (Auxiliary) interested (Adjective) in a new field should be used. Relevant helping verb..... should be used.

**41.** (3) The possessive case of **mother** is mother's. Hence, comes from the feed (consumption) of mother's milk. .....should be used here.

**42.** (3) Here subject is plural. Hence, plural verb i.e. world around us also have an effect..... should be used.

**43.** (3) It is a general process. Hence, Present Simple i.e. which include (plural) the time of gathering. ......should be used here.

**44.** (1) Too shows excess. Hence, infinitive i.e. In ralationshipe too, she seems to have ...... should be used here.

**45.** (1) Here, subject should be plural. It is evident from the sentence. Hence, our thoughts have a direct impact on our body....should be used here.

**46.** (2) Here, it is a metaphor for experiencing (Gerund) joy within should be used. The use of Noun is improper.

**47.** (1) Many is used with plural nouns to mean 'a large number of '.
Much shows quantity.
Hence, Many believe that if you.....should be used here.

**48.** (2) The possessive of 'they' is 'their'. Hence, certain aspects of their lives and........should be used here

**49.** (1) 'The' is used before celestial body. Hence, If the sun and the moon were balanced ...... should be used here.

**50.** (3) Here, our available awareness (Noun) and restrictions (Noun) should be used. Past participle is not proper use here.

**51.** (*) As the sense suggest, none of his roles (plural) hit/hits the mark should be used.
Note : When we use **none** of with a plural noun or pronoun, or a singular Noun referring to a group of people or thing, you can use either a singular or plural verb.

**52.** (3) Here, **Adjective** should be used. Hence, ........is very impressive should be used.
**Impressive (Adjective)** = making you feel admiration because they are very large, good, skilful etc.
**Look at the sentences :**
She was very impressive in the interview.
We were all impressed by her enthusiasm.

**53.** (1) **Police (Plural)** = an official organisation whose job is to make people obey law and to prevent and solve crime.
Police suspect a local gang.
The sentence shows past time. Hence, The Delhi police organised a mega should be used.

**54.** (2) **Infinitive** = to + $V_1$
Here, details, feed the IMEI number to receive should be used.

**55.** (3) According to the number of wasabi, singular verb i.e. that extra wasabi that comes along/has come along should be used.
**Wasabi (Uncountable)** = a root vegetable with a strong taste.

**56.** (1) Here, This is the first car for/of our neighbour, Mr., Sharma ........ should be used.
**Neighbour (Noun)** = a person who lives next to you or near you.
**Neighbourhood (Noun)** = vicinity; the area that you are in or the area near a particular place.

**57.** (1) **Focus (Verb)** = pay particular attention to .
**Associate (Verb)** = link; connect.

**58.** (2) **Outcome (Noun)** = result; consequence.

**59.** (3) **Materialize (Verb)** = come about; take place; happen, come into being.
**Neutralize (Verb)** = make ineffective; offset.

**60.** (1) **Commitment (Noun)** = dedication, allegiance
**Abashment (Noun)** = embarrassment; discomfiture.
**Abolishment (Noun)** = suppression; annihilation; extermination.
**Monument (Noun)** = memorial; statue etc. to commemorate a notable person or event.

**61.** (4) **Inspired (Adjective)** = filling someone with confidence and desire to do something;
**Uncharted (Adjective)** = that has not been visited or investigated before; not mapped; unknown.
**Chartered (Adjective)** = qualified according to the rules of professional organisation that has a royal charter; hired.
**Uncluttered (Adjective)** = of a room etc. not having too many objects in it and looking tidy.
**Beleagured (Adjective)** = having a lot of problems or difficulties.

**62.** (1) **Experienced (Past Participle)** = come across; encountered; met.
**Hamper (Verb)** = to prevent someone doing something easily.
Hampered = Prevented

**63.** (2) **Recognition (Noun)** = identification; show of admiration.

**64.** (3) **Chaos (Noun)** = complete

disorder and confusion; disarray.

**Hurdles (Noun)** = obstacles.

**Rituals (Noun)** = rites; observance.

**65.** (1) **Possession (Noun)** = ownership; keeping.

**Advancement (Noun)** = development; progress; growth.

**Burden (Noun)** = a load; gist; substance.

**66.** (3) **Truth (Noun)** = fact

**Effect (Noun)** = result; outcome.

**67.** (2) **Hardly** = scarcely; barely; only just

**Rarely** = not often; seldom.

**69.** (3) **Create (Verb)** = produce, make

**Assimilate (Verb)** = a bsorb; grasp; take in and understand fully.

**Analyse (Verb)** = examine methodically and in detail.

**70.** (1) **Personality (Noun)** = the combination of characteristics that form an individual's distinctive character.

**71.** (1) **Probability (Noun)** = likelihood; chance; expectation.

**Capability (Noun)** = ability, capacity

**Sensibility (Noun)** = sensitivity; understanding; appreciation.

**92.** (2) **Many** = used to mean "a large number of ."

**Look at the sentences :**

Not many people have heard of him.

Uncountable nouns take much.

How much money have you got?

Hence, were seen by many as should be used here.

**93.** (2) **Proof (Noun)** = evidence

Keep your receipt as proof of purchase.

Hence, as proof of competence (Ability) should be used here.

**94.** (1) Here appropriate preposition is 'for'

For is used to show purpose.

**95.** (2) An Adjective qualifies a Noun and between is used for two things. Hence, diplomatic (Adjective) relations (Noun) between the two countries should be used here.

**96.** (3) **Selective (Adjective)** = intentionally choosing some things and not others.

Hence, selective targeting should be used here.

**Selected (Adjective)** = to choose by making careful decisions.

**97.** (1) Here, pair of similar nouns should be used. Hence, religion and caste should be used.

**Casteism** = adherence to a caste system.

**Caste (Noun)** = social order; class.

**98.** (2) **Appropriate preposition is** = at/over.

**99.** (1) Here, Gerund i.e. expressing should be used.

**Articulate** = ability to speak fluently and coherently.

**Look** : preposition 'in' has been used.

**100.** (2) For non-living things, that/which relative pronoun is used. Hence, that started from should be used.

**101.** (3) The community is a singular collective Noun. Hence, singular verb i.e. The community has laid stress should be used.

**102.** (1) **Discriminate (Verb)** = differentiate; distinguish.

**Look at the sentence :**

She felt she had been discriminated **against** because of her age.

**103.** (2) **Symptomatic (Adjective)** = indicative, serving as a symptom.

Hence, symptomatic of a decline should be used

**Decline (Noun)** = to become of less importance.

**Look at the sentence :**

She seemed to be recovering and then she **went into a decline.**

**104.** (3) For Nearness, **these** is used.

**105.** (1) **Where** is used after words or phrases that refer to a place or situation to mean 'at', 'in' or 'to which'.

**106.** (1) Here, a longer (more time) period (singular) of time should be used.

**107.** (2) Related agrees with preposition 'to'.

**108.** (3) **Emerging** = starting to exist.

Hence, one (new/a certain) emerging business should be used here.

**109.** (1) Here, **infinitive** = to + $V_1$ i.e. fly freely (Adverb) should be used.

He runs fast (Adverb).

**110.** (2) **Think outside or out of the box** = think in an original or creative way.

Hence, how to think out of the box should be used.

**111.** (3) Here, in our mind about planing should be used.

**112.** (1) Here, donot need or neednot should be used

You needn't come until later.

You needn't do the washing up.

You donot need to come until later.

**113.** (2) **By the roadside** = at the edge of the road.

The car pulled pulled in by the roadside.

**134.** (2) **Structure of present perfect (Passive) :**

Subject + has/have + been + $V_3$

Hence, has been criticised should be used.

**135.** (3) **Racist (Noun)** = a person who shows or feels discrimination or prejudice against people of other races.

**136.** (3) **Cosily (Adverb)** = in a comfortable warm and pleasant way.

**Snuggle up** = settle or move into a warm, comfortable position.

To modify a verb, an adverb should be used.

**138.** (2) Here, Subject (Nominative case) should be used.

**139.** (3) Here, Subject is singular. Hence, presents will be used.

**140.** (4) **Ambitious (Adjective)** = having or showing a strong desire and determination to succeed.

**142.** (4) **Resolutely (Adverb)** = in

an admirably purposeful, determined and unwavering manner.

**143.** (4) Here, Noun should be used. Noun + of + Noun
**Adoption (Noun)** = accepting or starting to use something new.

**154.** (4) Connective ⇒ that
Pronouns change according to rule S O N
1 2 3
Present Simple ⇒ Past Simple
Now ⇒ Then

**155.** (2) Connective ⇒ that
Present Simple ⇒ Past Simple
Here ⇒ there

**156.** (4) Connective ⇒ that
Present Simple ⇒ Past Simple
Thus ⇒ so

**157.** (4) Connective ⇒ that
Present Simple ⇒ Past Simple
Now ⇒ then

**158.** (2) Connective ⇒ that
Present continuous ⇒ Past continuous
Pronouns change according to
S O N
rule 1 2 3
Here ⇒ there

**159.** (3) Connective ⇒ that
Third person requires no change.
Present continuous ⇒ Past continuous

**160.** (4) Connective ⇒ that
Present continuous ⇒ Past continuous.
This ⇒ that

**161.** (4) Connective ⇒ that
First person changes according to the number and person of subject.
Present tense ⇒ Past tense.

**162.** (3) Connective ⇒ that
Present perfect ⇒ Past perfect
Ago ⇒ before

**163.** (2) Connective ⇒ that
Present perfect ⇒ Past perfect
Here ⇒ there
Yesterday ⇒ a day before/previous day.

**164.** (3) Connective ⇒ that
Present perfect ⇒ Past perfect
These ⇒ those
Today ⇒ that day

**165.** (4) Connective ⇒ that
Present perfect ⇒ Past perfect
Hence ⇒ thence
I cannot ⇒ she could not

**166.** (3) Connective ⇒ that
I have been ⇒ he had been
It started ⇒ it had started (past perfect).

**167.** (4) Connective ⇒ that
Past simple ⇒ Past perfect
This ⇒ that

**168.** (4) Said to ⇒ told
Connective ⇒ that
Past continuous ⇒ Past perfect continuous
Second person (You) changes according to the number and person of object S O N
1 2 3

**169.** (3) Connective ⇒ that
Here is ⇒ there was
I have been ⇒ he had been (past)

**170.** (2) Said to ⇒ asked
Connective ⇒ if
Future simple ⇒ Past simple.
Interrogative ⇒ Assertive
Here ⇒ there

**171.** (1) Said ⇒ asked
Wh-question ⇒ connective
Can I ⇒ he could (Assertive)

**172.** (1) Connective ⇒ that
I will give you ⇒ he would give us. S O N
1 2 3

**173.** (1) Connective ⇒ that
We have ⇒ they had
this ⇒ that

**174.** (2) Connective ⇒ that
This ⇒ that
Present tense ⇒ Past tense.

**175.** (3) Said to ⇒ asked
Connective ⇒ if
Interrogative ⇒ Assertive (Past simple)

**176.** (1) Said to ⇒ asked
**You** changes according to the number and person of object
S O N
1 2 3
Interrogative ⇒ Assertive

**177.** (1) Connective ⇒ that
Present continuous ⇒ Past continuous.
Pronouns follow S O N formula.
1 2 3

**178.** (2) Connective ⇒ that
We have been ⇒ they had been
Here ⇒ there

**179.** (4) Connective ⇒ that
We have ⇒ they had

**180.** (1) Connective ⇒ that
We will ⇒ they would

**181.** (2) Is/am/are + Subject + $V_3$ + by + Object?

**182.** (1) Subject + is/am/are + $V_3$ + by + Object +....

**183.** (2) Subject + is/am/are + not + $V_3$ + by + Object.

**184.** (3) Is/am/are + Subject + $V_3$ + by + Object?

**185.** (4) Subject + is/am/are + being + $V_3$ + by + Object

**186.** (1) Is/am/are + Subject + $V_3$ + by + Object?

**187.** (4) Subject + is/am/are + not + $V_3$ + by + Object.

**188.** (2) Is/am/are + Subject + $V_3$ + by + Object?.

**189.** (3) Subject + is/am/are + $V_3$ + by + Object +.....

**190.** (2) Subject + is/am/are + never(adverb) + $V_3$ + by + Object.

**191.** (1) Subject + is/am/are + adverb + $V_3$ + by + Object

**192.** (4) Gerund + is/am/are + adverb + $V_3$ + by + Object.

**193.** (4) Subject + was/were + $V_3$ + by + Object +.......

**194.** (4) Subject + is/am/are + $V_3$ + by + Gerund

**195.** (2) Is/am/are + Gerund + $V_3$ + by + Object?

**196.** (1) Subject + need(s) to be + $V_3$ + by + Object

**197.** (4) Is/am/are + Subject + $V_3$ + by + Object?

**198.** (3) Is/am/are + Subject + $V_3$ + by + Object?

**199.** (1) Subject + is/am/are + $V_3$ +....

**200.** (1) Subject + was/were + $V_3$ + adverb + by + Object.